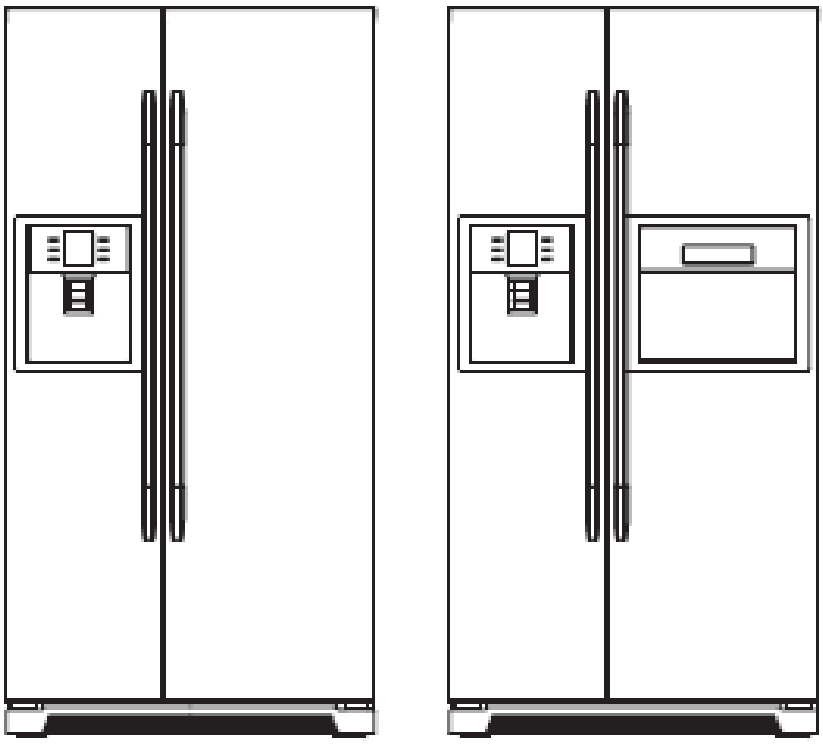
Electrolux
Distriparts

SERVICE MANUAL

REFRIGERATION



Side by Side

Spares Operations Italy
Corso Lino Zanussi, 30
I - 33080 PORCIA / PN (ITALY)
Fax +39 0434 394096

S.O.E.

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ITZPR

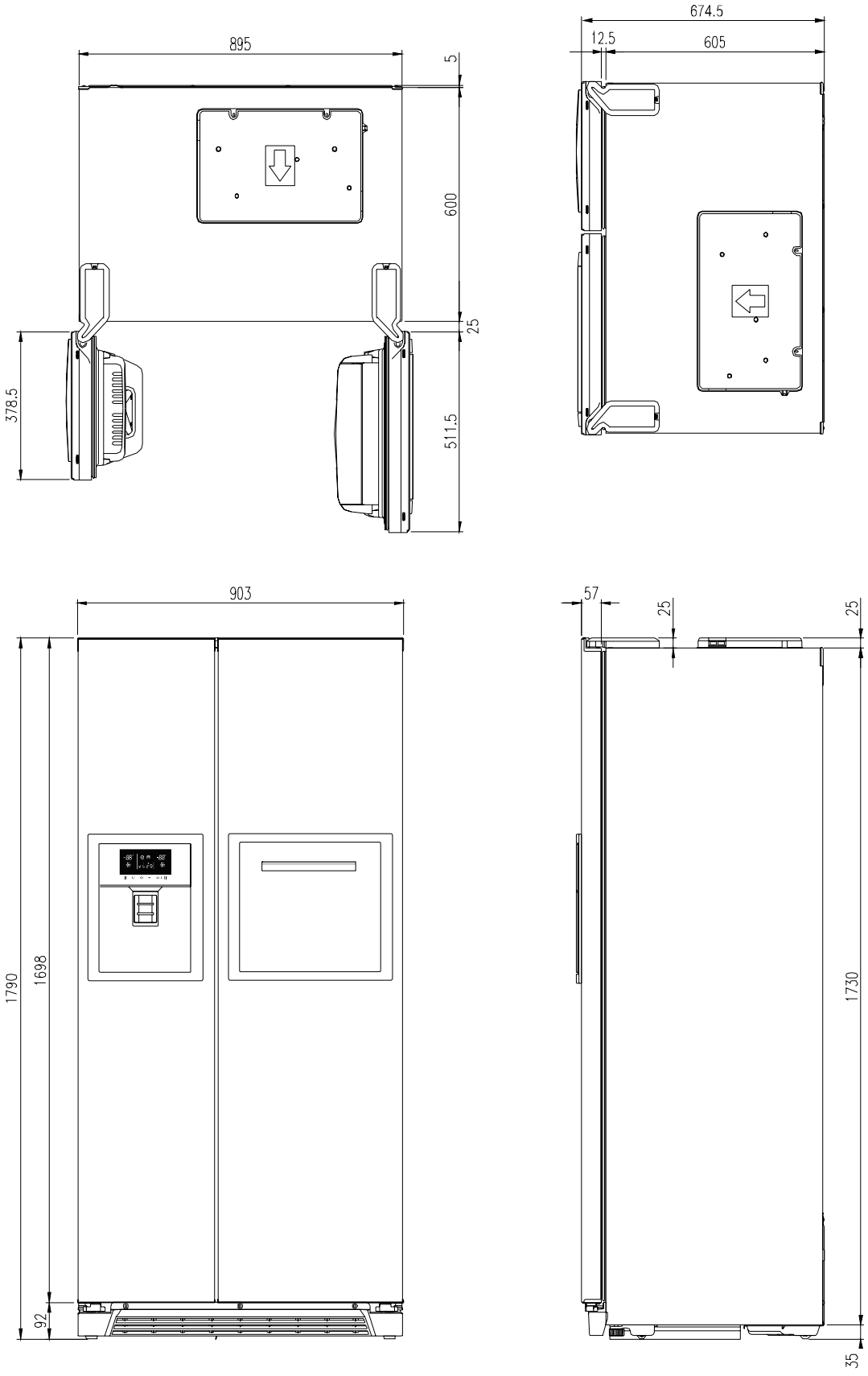
FACTORY: 7DW

1. Specification

Factory No.		FRU-57PB..	FRU-57PH..	FRU-54PD..	FRU-54PE..	FRU-54PF..	FRU-54PG..
Buyer No.	ELECTROLUX	ENL626..	-	ENL607..	-	-	ENL608..
	AEG	-	S85596..	S85606..	-	S85616..	S85618..
	ZANUSSI	-	-	ZRS9600..	-	-	-
Feature	Dispenser	x	x	O	O	O	O
	H/Bar	x	O	x	x	O	O
	Magic Cool Zone	x	x	x	O	x	O
Gross Vol. (ISO 15502)	Total	618	618	604	604	604	604
	Freezer	241	241	227	227	227	227
	Refrigerator	377	377	377	377	377	377
Storage Vol. (ISO 15502)	Total	555	555	531	518	531	518
	Freezer	201	201	175	175	175	175
	Refrigerator	354	354	356	343	356	343
Diemension	Width (mm)	895					
	Depth (mm)	674.5 (Without Handle)					
	Height (mm)	1790					
Weight (kg)		104	106	115	117	117	119

Cooling Cycle	Refrigerant Type	R-600a	
	Refrigerant Charge	76g	
	Evaporator Type	Fin Type	
	Condenser Type	Fan Cooling System	
	Dryer	Molecular Sieve xH-9	
	Capillary Tube	ID0.7 x T0.55 x L2200	
Heater	Defrost Heater	AC 220V / 192W	
	Dispenser Heater	x	AC 220V / 5W
	Water Pipe Heater	x	AC 220V / 5W
	Main Duct Heater	AC 220V / 7W	
	Home Bar Heater	x	AC 220V / 10W
Sensor	Defrost Sensor	PBN-43	
	Freezer Sensor	PT-38	
	Refrigerator Sensor	PBN-43	
Electronic Part	Fuse Temp. (Defrost)	AC 250V, 10A, 77C	
	Freezer Fan Motor	DC 13V, 2050rpm	
	Refrigerator Fan Motor	DC 13V, 1850rpm	
	Condenser Fan Motor	DC 13V, 1100rpm	
	Freezer Lamp	25W x 1EA	
	Refrigerator Lamp	25W x 2EA	

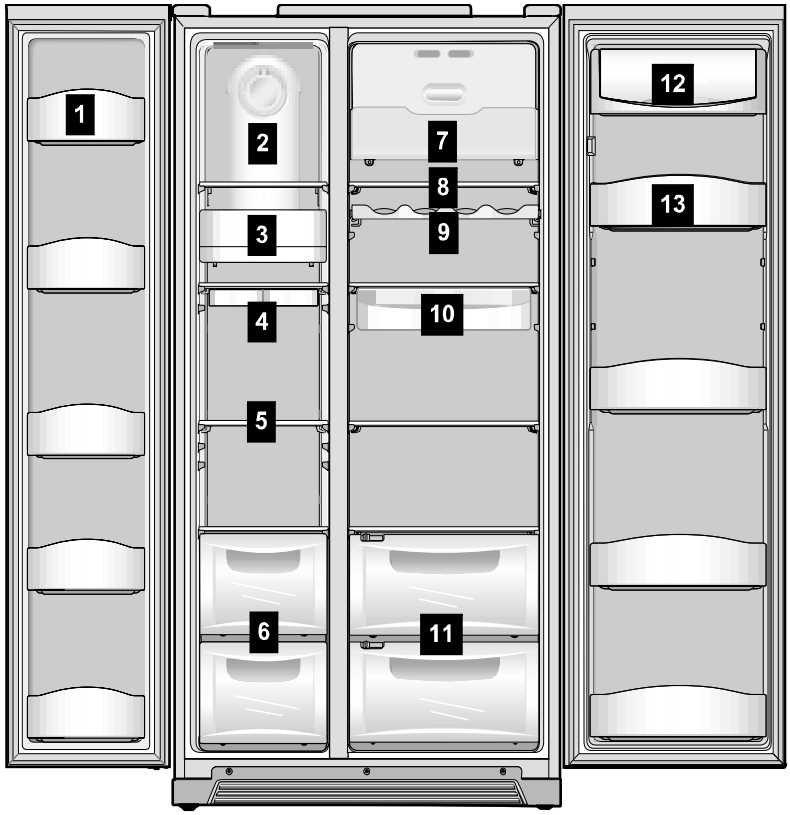
2. External Size



** Features are model dependent. All model has same size.*

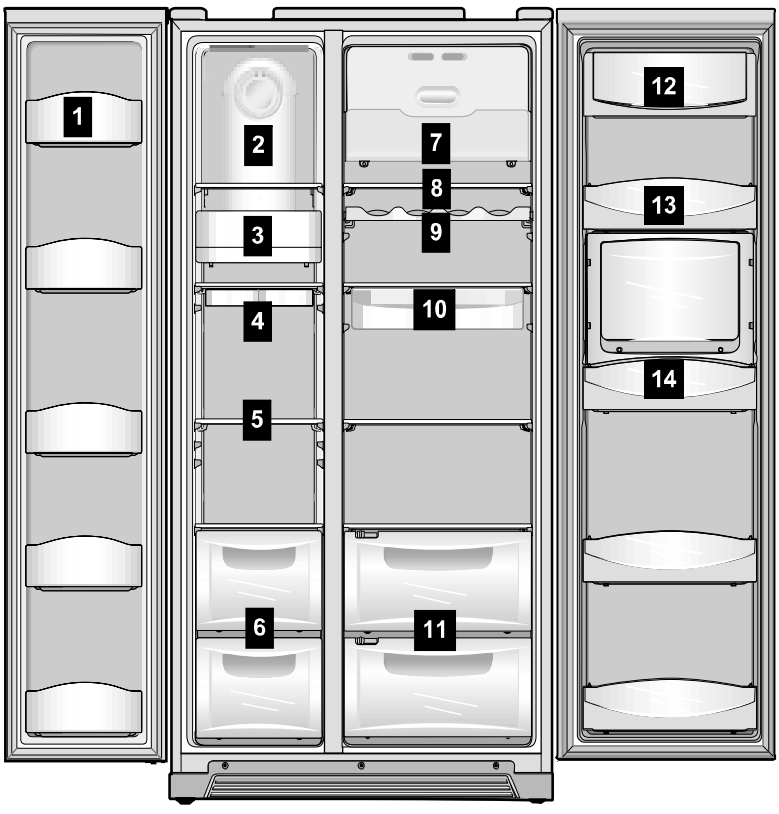
3. Interior Parts

3-1. Basic Models



1) Freezer Pocket (5ea)
2) Cover Feezer Fan
3) Freezer Lamp (25Wx1ea)
4) Ice Tray
5) Freezer Shelf
6) Freezer Case (2ea)
7) Rfrigerator Lamp (25Wx2ea)
8) Rfrigerator Shelf
9) Wine Rack (*Option)
10) Chilled Case
11) Refrigerator Case (2ea)
12) Dairy Pocket
13) Refrigator Pocket

3-2. Basic Models (With H/Bar)



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5) Freezer Shelf
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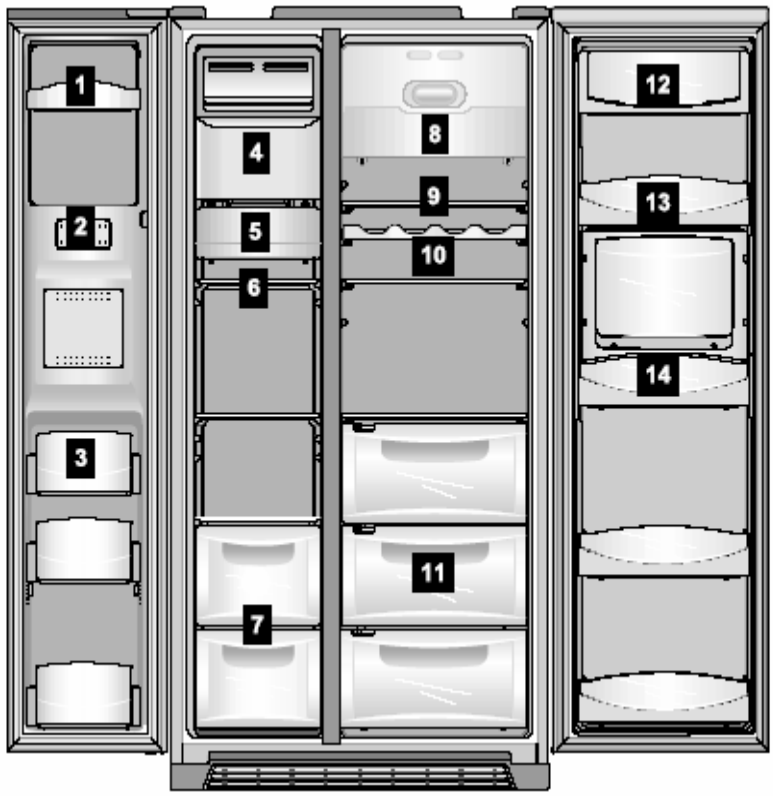
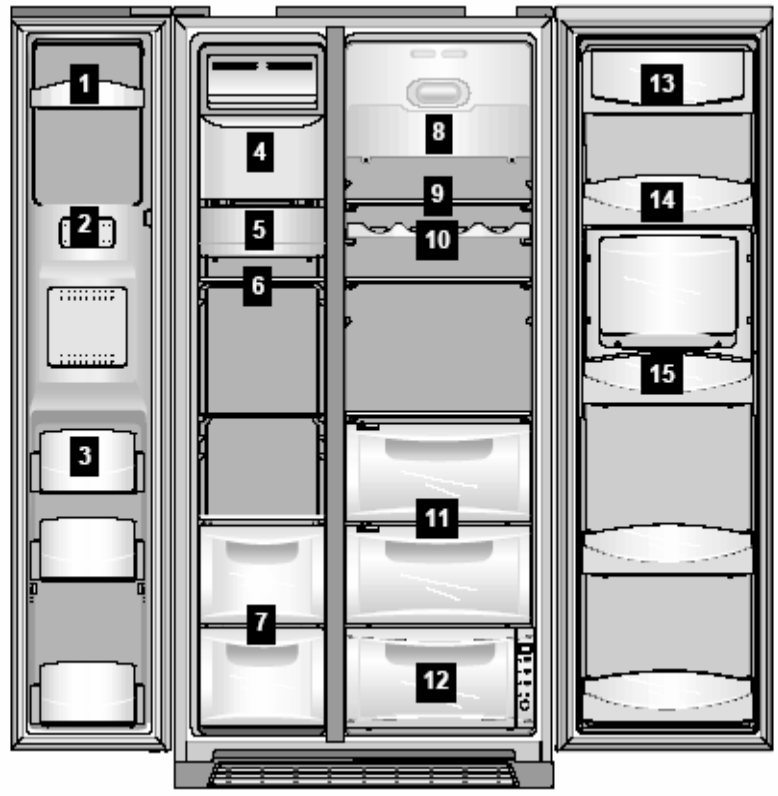
7) Rfrigerator Lamp (25Wx2ea)
8) Rfrigerator Shelf
9) Wine Rack (*Option)
10) Chilled Case
11) Refrigerator Case (2ea)
12) Dairy Pocket
13) Refrigator Pocket
14) Refreshment Pocket

3-3. Dispenser Models (With H/Bar)



1) Freezer Top Pocket (1ea)
2) The mouth of the ice
3) Freezer Pocket (3ea)
4) Case Ice Crusher
5) Freezer Lamp (25Wx1ea)
6) Freezer Shelf
7) Freezer Case (2ea)
8) Refrigerator Lamp (25Wx2ea)
9) Refrigerator Shelf
10) Wine Rack (*Option)
11) Refrigerator Case (3ea)
12) Dairy Pocket
13) Refrigerator Pocket (3 ea)
14) Refrehsment Pocket

3-4. Dispenser Models (With H/Bar & Magic Room)



1) Freezer Top Pocket (1ea)
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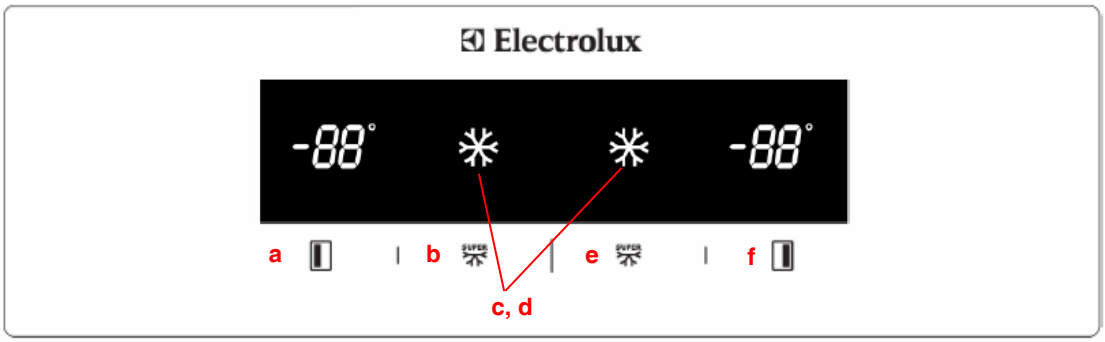
6) Freezer Shelf
7) Freezer Case (2ea)
8) Refrigerator Lamp (25Wx2ea)
9) Refrigerator Shelf
10) Wine Rack (*Option)
11) Refrigerator Case (2ea)
12) Magic Room (*Option)
13) Dairy Pocket
14) Refrigerator Pocket (3 ea)
15) Refrehsment Pocket

1. Display (Basic Model)



a	Temperature adjustment button for freezer compratment
b	Super(Quick) freezer compartment button
c	Quick mode (Freezer compartment) display LED
d	Quick mode (Refrigerator compartment) LED
e	Super(Quick) refrigerator compartment button
f	Temperature adjustment button for refrigerator compratment

2. Display Control

FCP	Cotrol
Temp. Display (Set Temp.)	Initial Mode : Freezer / Refrigerator set medium (-19C / 4C)
SUPER FRZ, SUPER REF. Icon	Button

3. FRZ. SET button

1) Temperature control of freezer compartment

2) Initial power plug in : Medium (-19C)

- Every time you press the FRZ. SET button, the setting temperature changes below order.

4. SUPER FRZ. Button

When this button press, the QUICK and Speed icon is flicker 6 times and keep ON.

(By pressing the SUPER FRZ. Button again you can stop this function.)

5. REF. SET button

1) Temperature control of refrigerator compartment

2) Initial power plug in : Medium (4C)

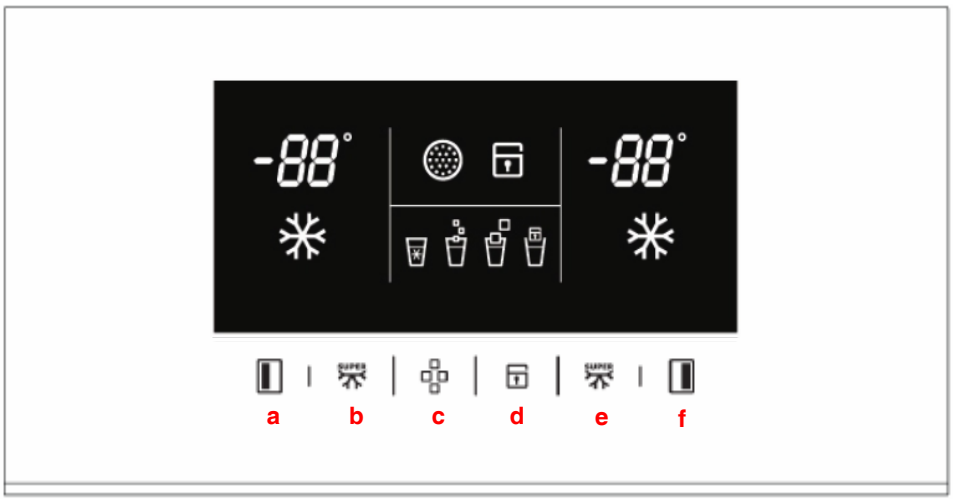
- Every time you press the REF. SET button, the setting temperature changes below order.

6. SUPER REF. Button

When this button press, the QUICK and Speed icon is flicker 6 times and keep ON.

(By pressing the SUPER REF. Button again you can stop this function.)

1. Display (Dispenser Type)



a Temperature adjustment button for freezer compratment

b Super(Quick) freezer compartment button

c Dispenser selction button. (Water / Crushed ice / Cubed ice)

Ice maker lock button

Reset water filter button after exchanging the filter

d Children lock button (Hold 3 sceconds)

e Super(Quick) refrigerator compartment button

f Temperature adjustment button for refrigerator compratment

2. Display Control

FCP	Cotrol
Temp. Display (Set Temp.)	Initial Mode : Freezer / Refrigerator set medium (-19C / 4C)
SUPER FRZ, SUPER REF. Icon	Button
WATER / CUBED ICE / CRUSHED ICE	Button
KEY LOCK ICON	Button
FILTER CHANEGE LED	AFTER 6 Month, LED ON

3. FRZ. SET button

1) Temperature control of freezer compartment

2) Initial power plug in : Medium (-19C)

- Every time you press the FRZ. SET button, the setting temperature changes below order.

4. SUPER FRZ. Button

When this button press, the QUICK and Speed icon is flicker 6 times and keep ON.

(By pressing the SUPER FRZ. Button again you can stop this function.)

5. REF. SET button

1) Temperature control of refrigerator compartment

2) Initial power plug in : Medium (4C)

- Every time you press the REF. SET button, the setting temperature changes below order.

6. SUPER REF. Button

When this button press, the QUICK and Speed icon is flicker 6 times and keep ON.

(By pressing the SUPER REF. Button again you can stop this function.)

7. RESET WATER FILTER

After 6 month of first power input, 'Change Filter Icon' is on. When the time comes to change follow the steps.

1) Push the Lock button.

2) Push the 'Filter Reset' button for 3 seconds. Then 'Change Filter'icon is off.

8. WATER/ICE select

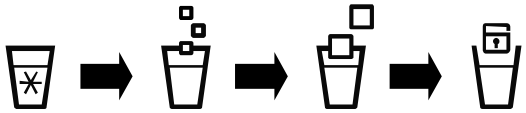
1) WATER / CRUSHED ICE / CUBED ICE mode available.

2) Every the button press, the order is WATER - CRUSHED ICE - CUBED ICE.

3) The initial mode is WATER.

9. ICE MAKER LOCK

1) Press the 'Dispenser' button continue. (Press again, the mode is OFF.)



2) When cleaning the ice storage case or when not use for a long period of time.

9. LOCK button

1) When lock the other buttons, press this button and LOCK icon is active.

(In this mode other button is unable except LOCK button.)

2) To unlock, push the button again.

< REFERENCE >

: Please wait for 2 ~ 3 seconds in order to take final ice or drops of water when taking out cup from the pressing switches after taking ice or water.

: The actual inner temperature varies depending on the frood status, as the indicated setting temperature is a target temperature, not actual temperautre within refrigerator.

1. Freezer Compartment Control

1) Adjust by the pushing the FRZ.SET button.

2) Compressor & Freezer Fan controlled by each mode ON/OFF point.

3) Freezer Compartment ON/OFF Difference : 2C

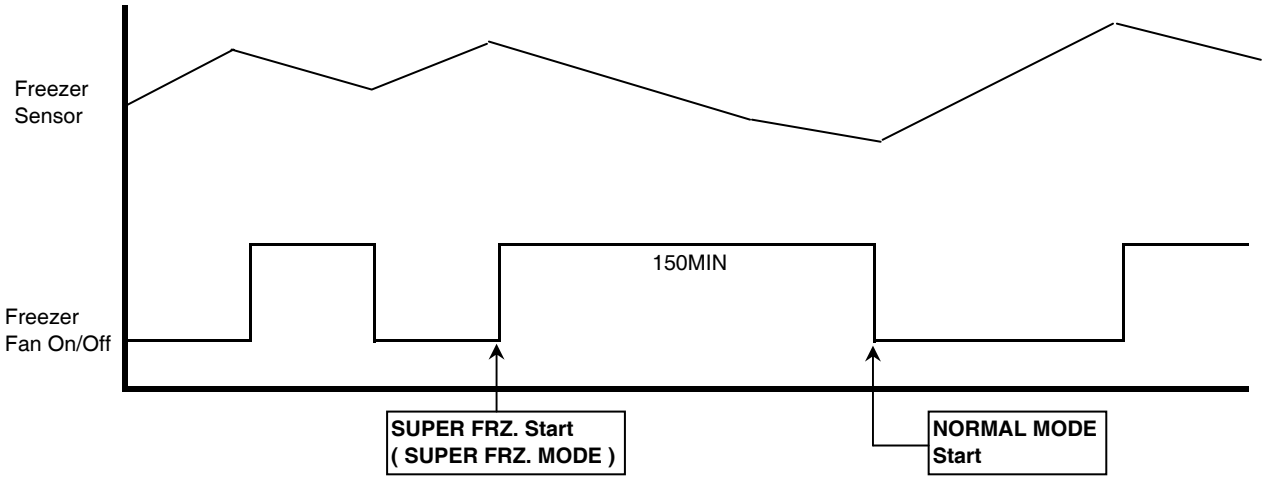
- MEDIUM OFF point : -19C
- When Room Temperature (RT) is below 13C, Freezer sensor OFF point 2C up (so, MEDIUM OFF : -17C)

4) Control Temperature Point in Each Mode

Division		*Initially On*	*1st Press*	*2nd Press*	*3rd Press*	*4th Press*	*5th Press*	*6th Press*
Setting temperature		***-19***	***-20***	***-21***	***-22***	***-16***	***-17***	***-18***
Temperature Control		*Medium*	*Medium Max*		*Max*	*Min*	*Medium Min*	
Normal	*Sensor On*	*-14.8*	*-15.8*	*-16.8*	*-17.8*	*-11.8*	*-12.8*	*-13.8*
	Sensor Off	*-16.8*	*-17.8*	*-18.8*	*-19.8*	*-13.8*	*-14.8*	*-15.8*
RT <= 13C	*Sensor On*	*-12.8*	*-13.8*	*-14.8*	*-15.8*	*-9.8*	*-10.8*	*-11.8*
	Sensor Off	*-14.8*	*-15.8*	*-16.8*	*-17.8*	*-11.8*	*-12.8*	*-13.8*

6) SUPER FRZ. (QUICK) Mode

- In this mode, Compressor & Freezer Fan motor is on unconditionally for 150min. (free of freezer sensor)



2. Refrigerator Compartment Control

1) Adjust by the pushing the REF.SET button.

LOW - MEDIUM LOW - MEDIUM - MEDIUM MAX - MAX

2) Refrigerator Fan controlled by each mode ON/OFF point.

3) Refrigerator Compartment ON/OFF Difference : 0.5C

- MEDIUM OFF point : 5.2C
- When Room Temperature (RT) is below 13C, Refrigerator sensor OFF point 2C up (so, MEDIUM OFF : 7.2C)

4) Weak Cooling Prevention Function

- This funtion is free of Freezer sensor.
- When refrigerator compartment reaches the Fan OFF point, the Fan is OFF.

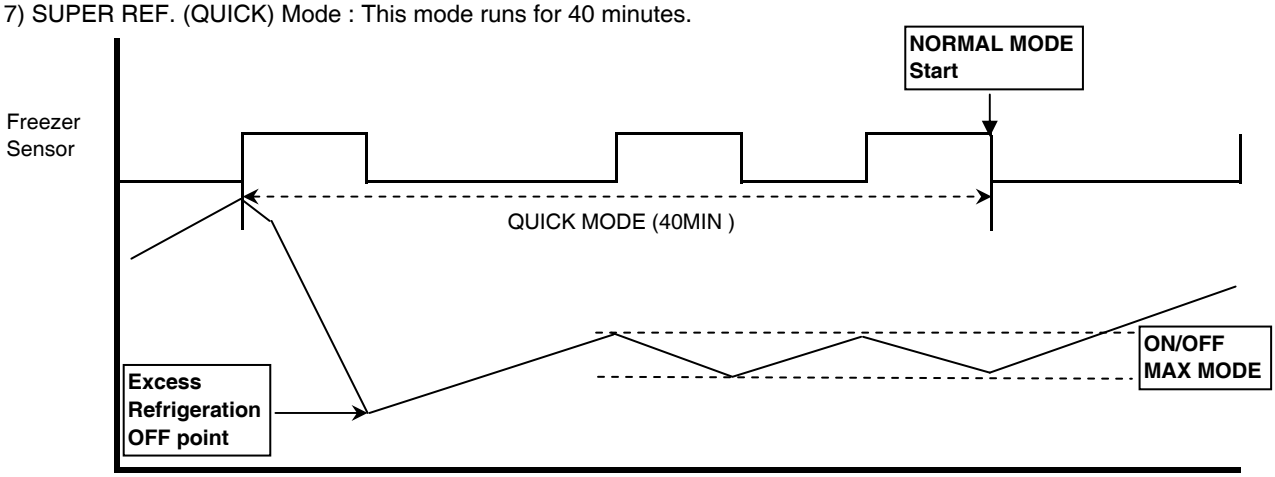
and then Compressor controlled by Freezer sensor.

- Weak cooling temperautre is + 7C in each sensor OFF temperature.
- Weak cooling terminate temperautre is same as each sensor OFF temperature.

6) Control Temperature Point in Each Mode

Division		*Initially On*	*1st Press*	*2nd Press*	*3rd Press*	*4th Press*	*5th Press*	*6th Press*
Setting		***4***	***3***	***2***	***8***	***7***	***6***	***5***
Temperature		*Medium*	*Medium Max*	*Max*	*Min*	*Medium Min*		
Normal	*Sensor On*	*5.7*	*4.7*	*3.7*	*9.7*	*8.7*	*7.7*	*6.7*
	Sensor Off	*5.2*	*4.2*	*3.2*	*9.2*	*8.2*	*7.2*	*6.2*
RT <= 13C	*Sensor On*	*7.7*	*6.7*	*5.7*	*11.7*	*10.7*	*9.7*	*8.7*
	Sensor Off	*7.2*	*6.2*	*5.2*	*11.2*	*10.2*	*9.2*	*8.2*
Weak refrigeration	*Sensor On*	*12.2*	*11.2*	*10.2*	*16.2*	*15.2*	*14.2*	*13.2*
	Sensor Off	*5.2*	*4.2*	*3.2*	*9.2*	*8.2*	*7.2*	*6.2*
Weak refrigeration & RT <= 13C	*Sensor On*	*14.2*	*13.2*	*12.2*	*18.2*	*17.2*	*16.2*	*15.2*
	Sensor Off	*7.2*	*6.2*	*5.2*	*11.2*	*10.2*	*9.2*	*8.2*

7) SUPER REF. (QUICK) Mode : This mode runs for 40 minutes.



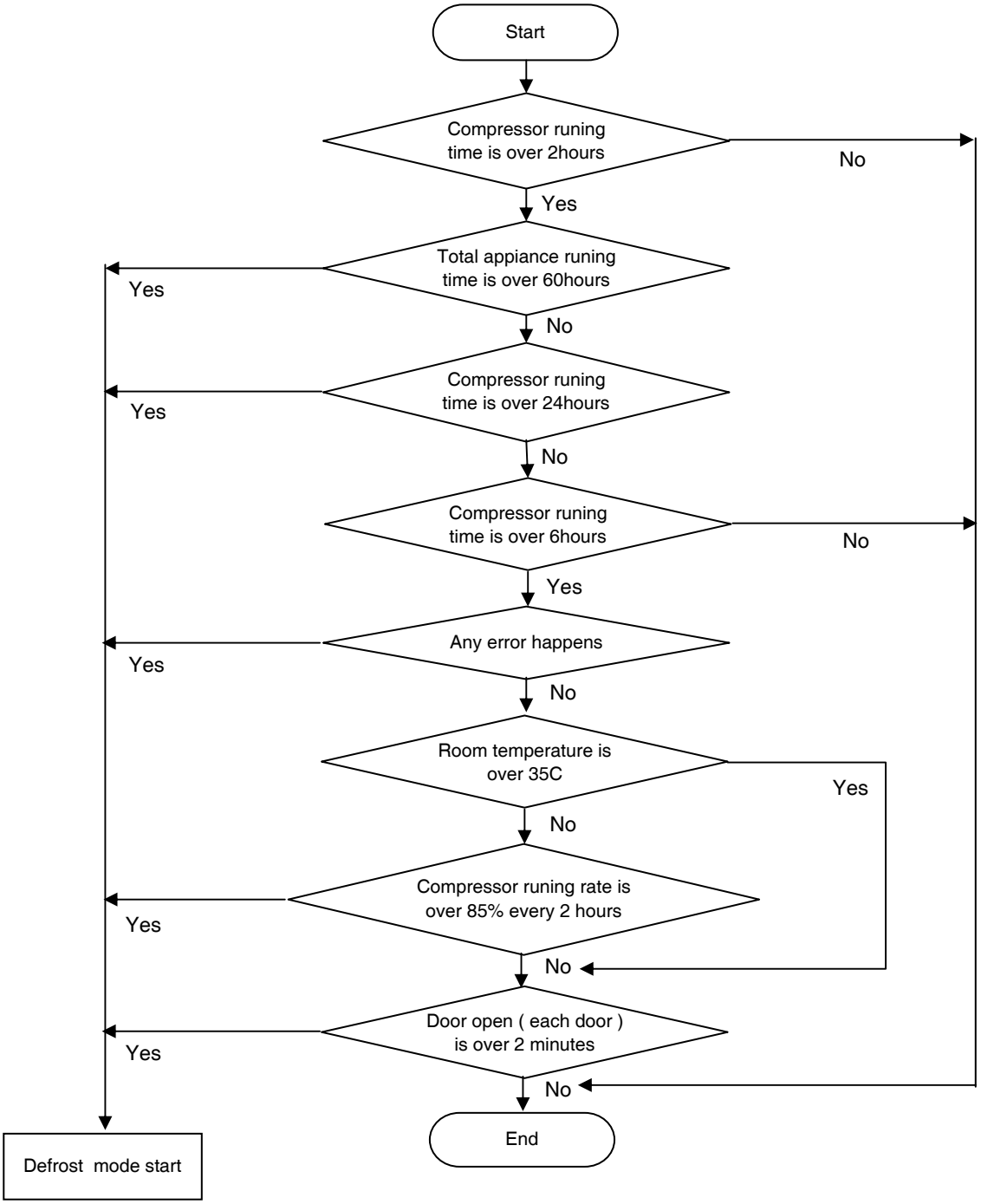
- Until the sensor reaches the Excess Refrigeration OFF point (-7C), Refrigerator Fan and compressor is ON.
- Until the QUICK Mode ends, the appliance runs with MAX dial mode.
- After QUICK Mode (about 40 mins) the normal mode start.

1. When Defrost Mode start?

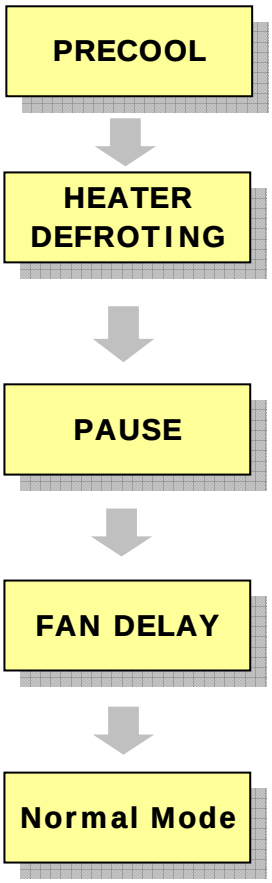
; When total Compressor runnig time becomes at 6, 8, 10, …, 24hours.

- The compressor runing rate is over 85% every 2 hours.
- Door opening time is over 2 minutes (Each Freezer / Refrigerator door)
- Total compressor running time (on time + off time) is 60hours.
- Any error happens. (R1, F1, D1, F3, RT-Sensor, C1, Door switch etc.)

(But, F3 error happens then defrost mode start without Pre-cool)



2. Normal Defrost Mode



1) PRECOOL
- Compressor runs (to cool down the freezer compartment prior to heater switch on) for 50minutes or until Freezer sensor temperature reaches -27C

2) HEATER DEFROSTING
- Defrost heater is switch on until Defrost Sensor temperature reaches 13C.
- Heater operation time
  ; 30 seconds - Heater is ON free of Defrost Sensor.
  ; 30 minutes - When Defrost Sensor is malfunction. (D1 error)
  ; 80 minutes - Heater maximum operation time. (F3 error)

3) PAUSE
- After Defrost Heater switch OFF, Compressor dosen't run within 7 minutes.

4) FAN DELAY
- Freezer & Refrigerator fan switch on after 5miunuts' cmopressor running.

Division	*PRECOOL*	*HEATER DEFROST*	*PAUSE*	*FAN DELAY*
Compressor	*ON*	*OFF*	*OFF*	*ON*
Freezer Fan	*ON*	*OFF*	*OFF*	*OFF*
Refrigerator Fan	*Control*	*OFF*	*OFF*	*OFF*
Defrsot Heater	*Off*	*ON*	*OFF*	*OFF*
Time	*50min*	*30min (D1 error)* *80min (F3 error)*	*7min*	*5min*

3. Forced Defrost Mode

1) How to start

(Basic Models Only)

; Press the REF. SET button 5 times while pushing the FRZ. SET button.

(Dispenser Models Only)

- Press the LOCK button.
- Press the Refrigerator Set button 5 times while pushing the Freezer Set button.

2) Except PRECOOL, steps are same as above **2. Normal Defrost Mode**.

1. How to enter this check mode

; Press the SUPER FRZ. button 5 times while pushing the FRZ. SET button.

2. The Front LED displays the current error code (if happens).

; Every time you press the FRZ. Set button, the following value display.

1) The appliance running time. (From the plug in.)

2) Freezer sensor temperature.

3) Defrost sensor temperature.

4) Refrigerator sensor temperature.

5) Room temperature.

3. How to exit this mode

1) Press the REF.SET button

2) After 4 minutes automatically exit.

4. Error Code

No	Display (Error Code)	Remark
1	***F1***	Freezer sensor disconnection or short
2	***r1***	Refrigerator sensor disconnection or short
3	***rt***	Room temperature sensor disconnection or short
4	***d1***	Defrost sensor disconnection or short
5	***dr***	Refrigerator Door switch is defective.
6	***dF***	Freezer Door switch is defective.
7	***dH***	Home Bar Door switch is defective.
8	***C1***	Abnormal or defective cycle
9	***F3***	Return after defrosting : abnormal or defective
10	***Co***	Pull-Down mode display (No error)
11	***d2***	Forced Defrost mode display (No error)

; All Error Code reset, when the relative parts turn into normal.

5. Troubleshooting when error happens

(If the relative parts is normal, Error code display will be reset.)

1) F1 error

- Cause : Freezer sensor disconnection or short.
- Check point : Measure the resistance between both terminals after separating CN9 of the Main PCB.

  If sensor is disconnected or short, change that in the freezer compartment.
- Error code display

Freezer sensor is short.


Freezer sensor is disconneted.

2) R1 error

- Cause : Refrigerator sensor disconnection or short.
- Check point : Measure the resistance between both terminals after separating CN8 of the Main PCB.

  If sensor is disconnected or short, change that in the refrigerator compartment.
- Error code display

Refrigerator sensor is short.


Refrigerator sensor is disconneted.

3) rt error

- Cause : Room temperature sensor disconnection or short.
- Check point : Measure the voltage of sensor part on the Main PCB.

  If voltage is 0.5~4.5V, normal. If voltage is 0V (short) or 5V (disconnect), change new one.
- Error code display

RT sensor is short.


RT sensor is disconneted.

4) d1 error

- Cause : Defrost sensor disconnection or short.
- Check point : Measure the resistance between both terminals after separating CN9 of the Main PCB.

  If sensor is disconnected or short, change that on the evaporator.
- Error code display

Defrost sensor is short.


Defrost sensor is disconneted.

5) Door switch error (dr, dF on display)

- Cause : When it senses the door open for more than 1 hour.
- Check point : Check the each door switch and exchange.

6) C1 error

- Cause : When compressor works for over 3 hours although Defrost sensor is over -5C.
- Check point : Refrigerant leakage.

7) F3 error

- Cause : in case defrosting mode ends after 80 minutes.
- Check point : Measure the resistance between both terminals of the defrost heater.

  If the resistance is infinity (disconnection) or 0 ohm (short).

1. How to enter this check mode

1) Press the LOCK button.

2) Press the Super Freezer button 5 times while pushing the Freezer Set button.

2. The Front LED displays the current error code (if happens).

; Every time you press the Freezer Set button, the following value display.

1) The appliance running time. (From the plug in.)

2) Freezer sensor temperature.

3) Defrost sensor temperature.

4) Refrigerator sensor temperature.

5) Room temperature.

6) P Factor display.

7) Filter remaing time until exchange. (Filter runing time is about 4,320Hr)

3. How to exit this mode

1) Press the LOCK button

2) After 4 minutes automatically exit.

4. Error Code

No	Display (Error Code)	Remark
1	***F1***	Freezer sensor disconnection or short
2	***r1***	Refrigerator sensor disconnection or short
3	***rt***	Room temperature sensor disconnection or short
4	***d1***	Defrost sensor disconnection or short
5	***dr***	Refrigerator Door switch is defective.
6	***dF***	Freezer Door switch is defective.
7	***dH***	Home Bar Door switch is defective.
8	***El***	Ice sensor disconnection or short
9	***EF***	Flow sensor is defective.
10	***Et***	Horizontal switch error
11	***Eg***	Water supply error
12	***EA***	Drop the ice while Et
13	***Eu***	Full ice switch error
14	***C1***	Abnormal or defective cycle
15	***F3***	Return after defrosting : abnormal or defective
16	***Co***	Pull-Down mode display (No error)
17	***d2***	Forced Defrost mode display (No error)

; All Error Code reset, when the relative parts turn into normal.

5. Troubleshooting when error happens

(If the relative parts is normal, Error code display will be reset.)

1) F1 error

- Cause : Freezer sensor disconnection or short.
- Check point : Measure the resistance between both terminals after separating CN15 of the Main PCB.

  If sensor is disconnected or short, change that in the freezer compartment.
- Error code display


Freezer sensor is short.

Freezer sensor is disconneted.

2) R1 error

- Cause : Refrigerator sensor disconnection or short.
- Check point : Measure the resistance between both terminals after separating CN14 of the Main PCB.

  If sensor is disconnected or short, change that in the refrigerator compartment.
- Error code display


Refrigerator sensor is short.

Refrigerator sensor is disconneted.

3) rt error

- Cause : Room temperature sensor disconnection or short.
- Check point : Measure the voltage of sensor part on the Main PCB.

  If voltage is 0.5~4.5V, normal. If voltage is 0V (short) or 5V (disconnect), change new one.
- Error code display


RT sensor is short.

RT sensor is disconneted.

4) d1 error

- Cause : Defrost sensor disconnection or short.
- Check point : Measure the resistance between both terminals after separating CN15 of the Main PCB.

  If sensor is disconnected or short, change that on the evaporator.
- Error code display


Defrost sensor is short.

Defrost sensor is disconneted.

5) Door switch error (dr, dF, dH on display)

- Cause : When it senses the door open for more than 1 hour.
- Check point : Check the each door switch and exchange.

6) EI error

- Cause : Ice sensor is abnormal.
- Check point : Measure the resistance between both terminals after separating CN11 of the Main PCB.

  If sensor is disconnected or short, change that in the automatic ice maker.

7) EF error

- Cause : When Flow-sensor abnormal. (There is no pulse during some time.)

  The number of pulse signal is below 10 by 1 second during water supply.
- Check point : Water supply line.

8) Et error

- Cause : Level switch abnormal. (No pulse is sensed for some time.)
- Control : By time. (Supply mode is skipped.)

9) Eg error

- Cause : When Ice sensor temperature (5 minutes after water supply) doesn't go up.
- Check point : Ice sensor or water supply line.

10) EA error

- Cause : When sensing ice drop 3 times in level sensor switch error.
- Control : Stop ice maker
- After 1 time rotation EA error code disappear if level swtich is normal.

11) Eu error

- Cause : Sensor which senses if ice is full or not is abnormal.
- Control : When drops the ice, the motor rotates 90 degree.

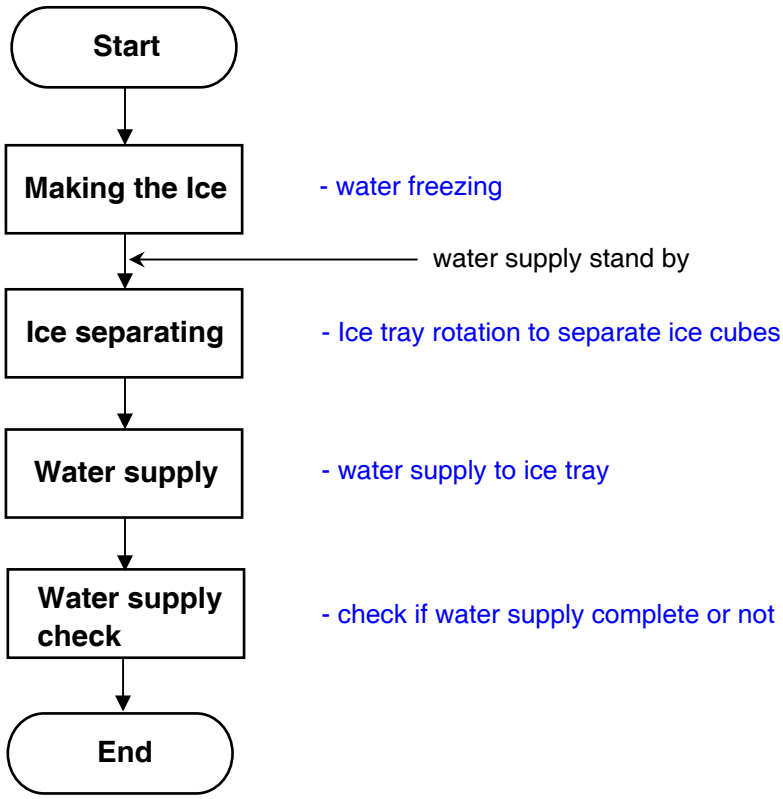
12) C1 error

- Cause : When compressor works for over 3 hours although Defrost sensor is over -5C.
- Check point : Refrigerant leakage.

13) F3 error

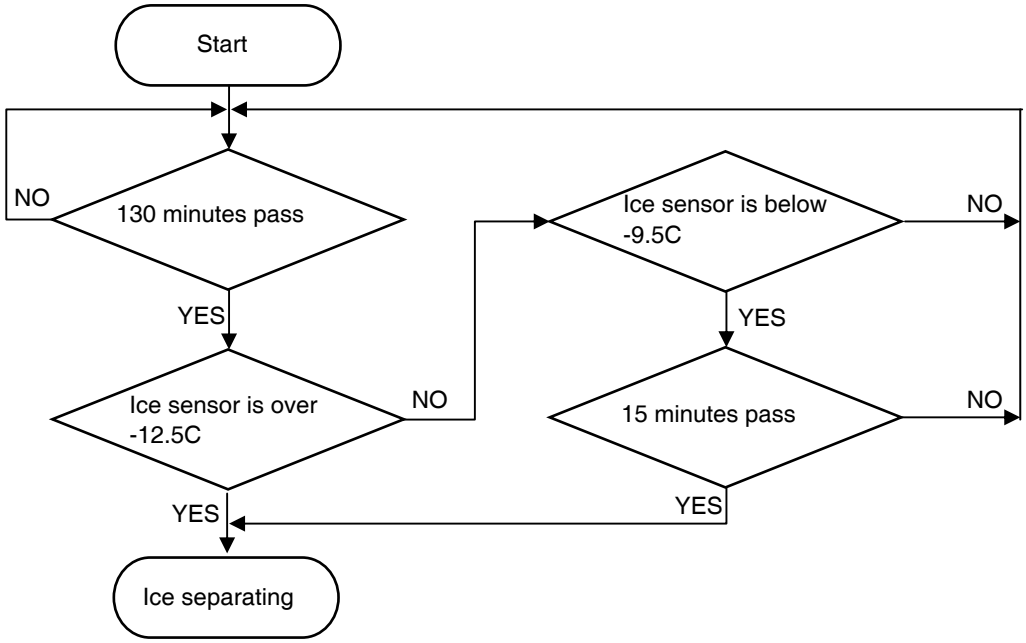
- Cause : in case defrosting mode ends after 80 minutes.
- Check point : Measure the resistance between both terminals of the defrost heater.
  If the resistance is infinity (disconnection) or 0 ohm (short).

1. Ice making flow



1) Press Test switch (which is under the ice tray) for more than 1 second and then test starts.
 - Test mode starts from ice separating mode.
 - In case test switch is abnormal, test is done only 1 time.
2) When the initial power input, ice tray turns to be horizontal.
3) Water supply hose heater control - defrost heater linkage operation
 - Heater is always ON if Room temperature sensor is abnormal or room temperature is below 15 degree.
 - Heater is ON for 60minutes (max limit time) if Flow sensor is abnormal.
4) Water supply stand by
 - Condition : When ice is full
 - Operation : Proceeds to ice making mode. (stop ice separating and water supply mode)
5) Crusher function
 - It stops operation when freezer door is open.
 - It operates if door is close.

2. Ice making mode

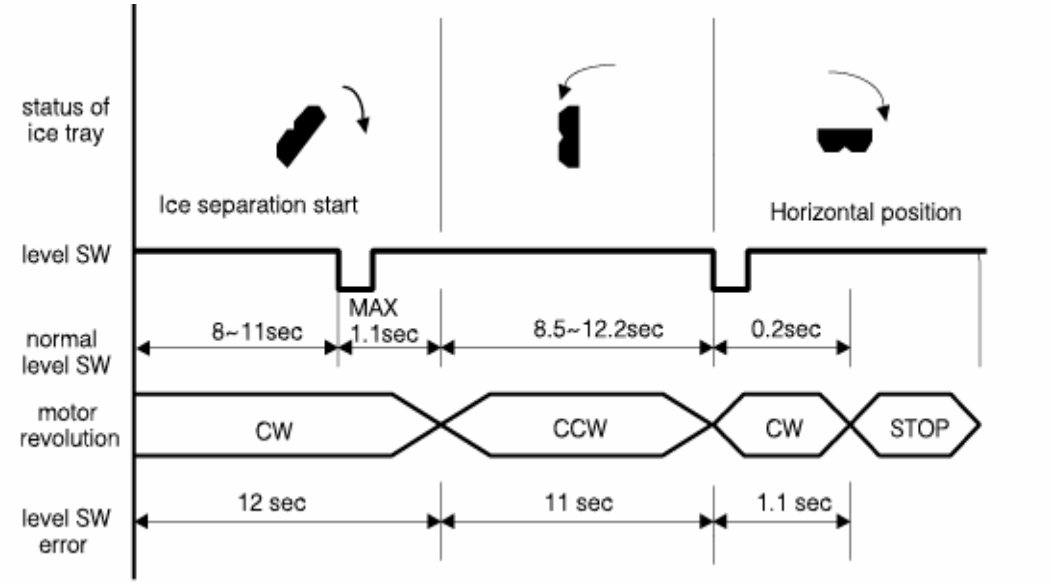


1) If Ice sensor temperature is below -12.5C after 130minutes, ice making completes.

2) If Ice sensor temperature keep below -9.5C for 15 minutes ice making complete, although the sensor is not below -12.5C

3) After 4.8hours ice making complete, when ice sensor is abnormal,

3. Ice separating(drop) mode



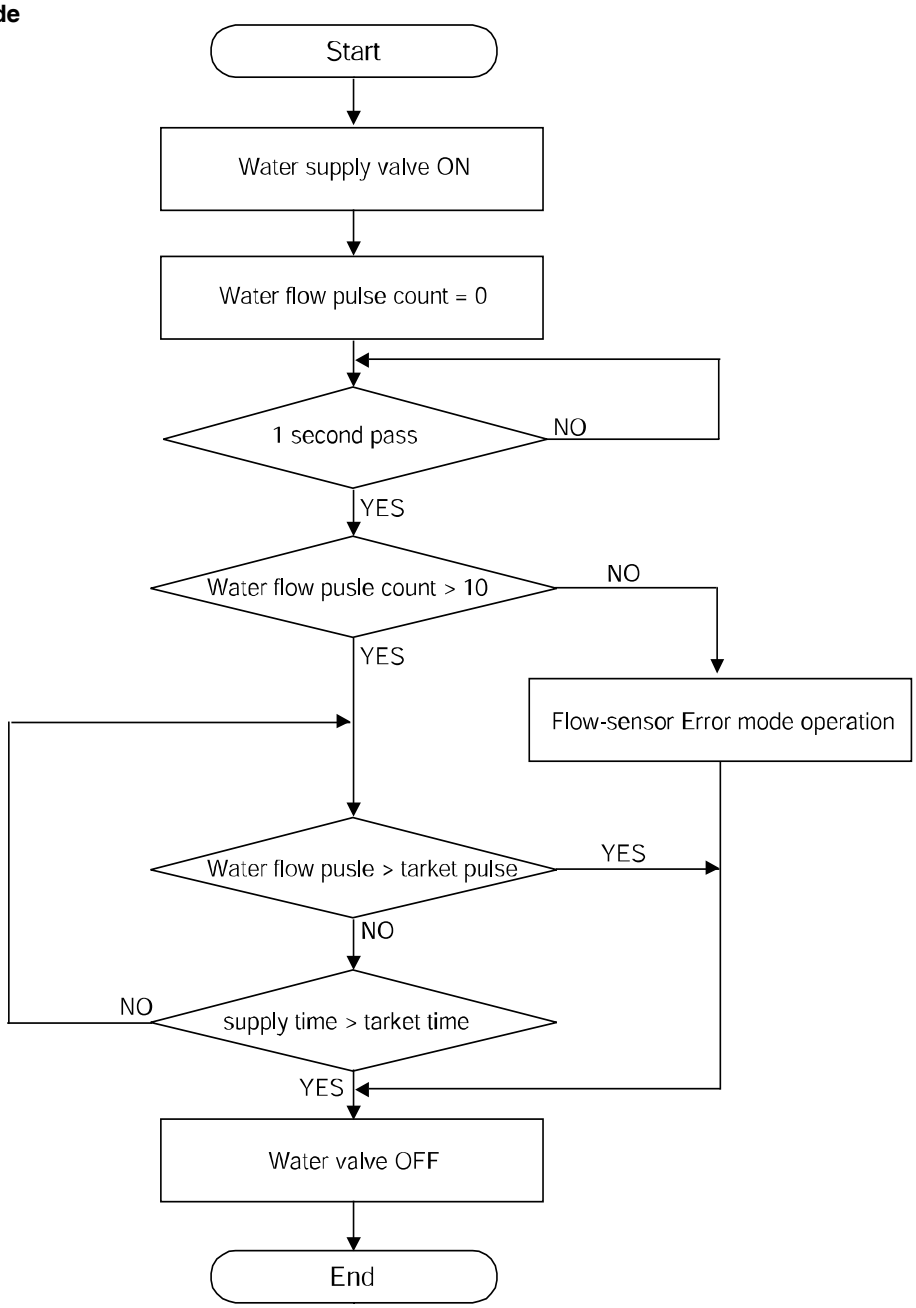
1) Time of each section is to verify level switch error.

2) It senses the rotation in each section.

3) When level switch is error, ice separation controlled by the time.

4) When rotation motor is error, the mode is pause.

4. Water supply mode



1) If water supply mode starts, the water valve is ON.

2) When Flow sensor is abnormal, supply mode controlled by the time.

3) Factor value is variable when After sales action. (Adjust water quantity)

- Normal Water flow pulse setting is 238. (When controlled by the time, maximum time limit is 15 seconds.)
- When the flow sensor is abnormal, time limit is 5.5 seconds.

5. Water supply check mode

Verify water supply completion by comparing room temperature sensor with ice sensor after 5 minutes from water supply.

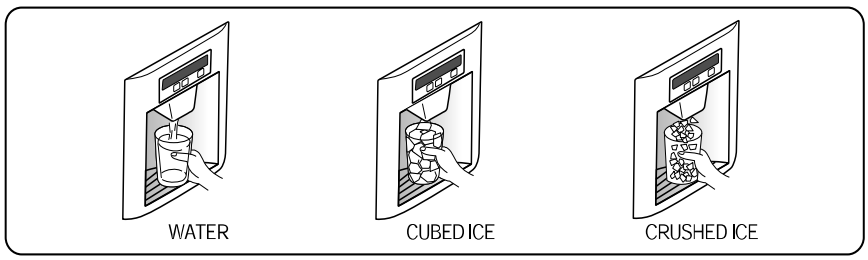
Room temperature sensor	Below 9C	~ 15C	~ 21C	~ 31C	~ 41C	Over 41C
Ice sensor	-10C	-9C	-8C	-7C	-6C	-5C

1. Water / Crushed Ice / Cubed Ice Select button

1) Default mode is Water

The selection order is Water - Cubed Ice - Crushed Ice - Water.

2) In each mode the selected is active by the dispenser button press.



2. Icemaker Lock button : It is active after pushing button

3. Display

1) Water icon turns ON as default mode.

2) The icon of each mode turns ON by pressing its button.

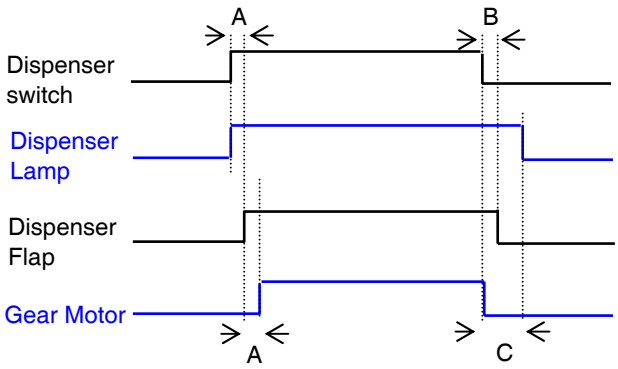
(If display switch makes error during operation of a mode, its icon is OFF.)

3) When Icemaker Lock button is ON, the Lock LED turns ON and Cubed Ice / Crushed Ice icon is OFF.

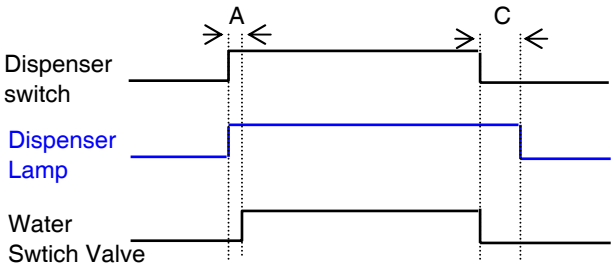
4) When no operation in Cubed / Crushed Ice mode for 1 hour, the mode change into Water mode automatically.

4. Control Flow and Timing Chart

1) Cubed Ice / Crushed Ice Mode



2) Water Mode



< Delay Time >

A = 500msec
B = 2.0Sec
C = 5.0Sec

1. Prevention compressor restart function

Although Freezer sensor temperature is low, compressor doesn't restart for 6 minutes from compressor OFF.

2. Beep funtion

1) When pushing the button on the Front Control Pannel.

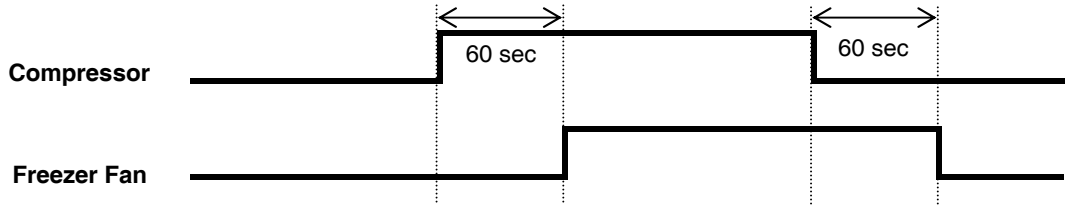
2) When initail power input. (4 beeps after 3 seconds.)

3) When Forced Deforst Mode starts (3 beeps), Pull Down Mode Starts (1 beep).

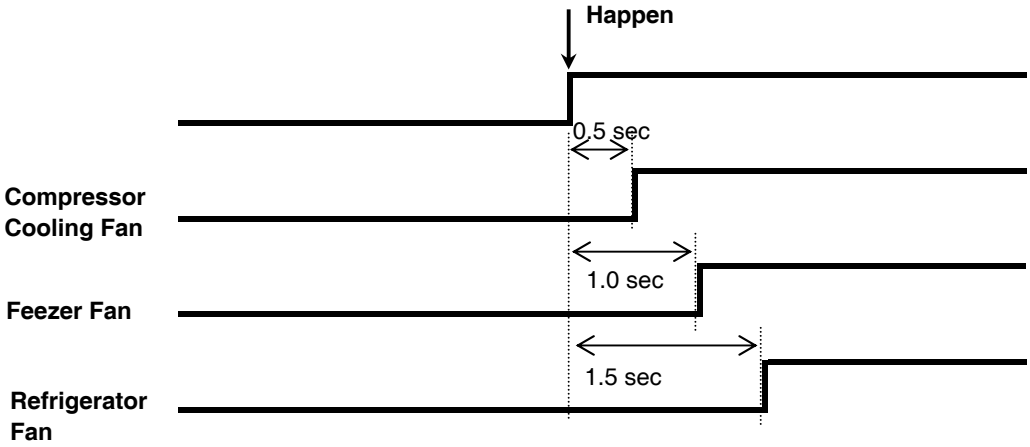
4) When Door is open. (Every 1 minute for 5 minutes.)

3. Fan Delay Function

1) Compressor ON/OFF vs Freezer Fan



2) Fan priority and delay function



4. Freezer, Refrigerator and Dispenser Lamp Control

1) Refrigerator Lamp

; This lamp operates depending on Refrigerator door switch or Homebar door switch.

; The lamp is automatically off when the switch (Refrigerator or Homebar) keeps opened for 10 minutes.

2) Freezer Lamp

; This lamp operates depending on Freezer door switch.

; The lamp is automatically off when the switch (Freezer compartment) keeps opened for 10 minutes.

3) Dispenser Lamp (Dispenser Models Only)

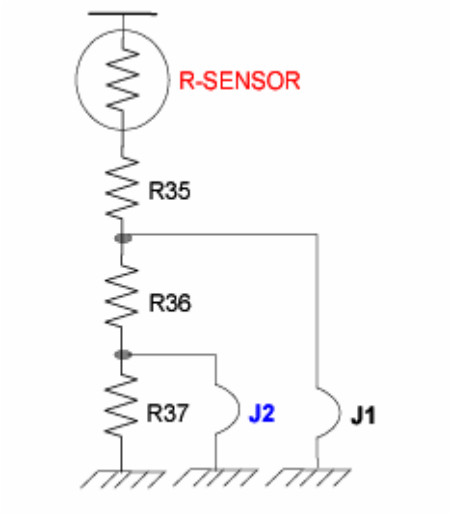
; This lamp operates depending on micro switch which locates dispenser button.

; The lamp keeps ON for 5 seconds after micro swich is close.

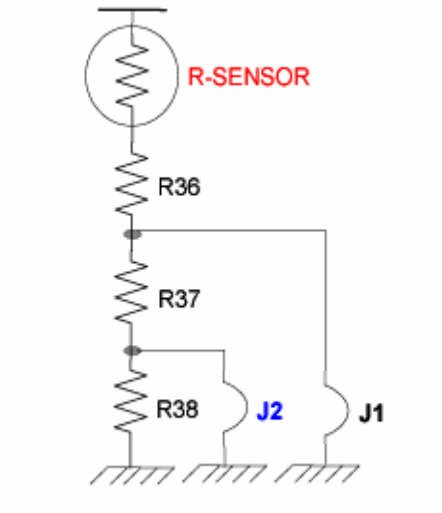
5. Weak Cooling Trouble Shooting

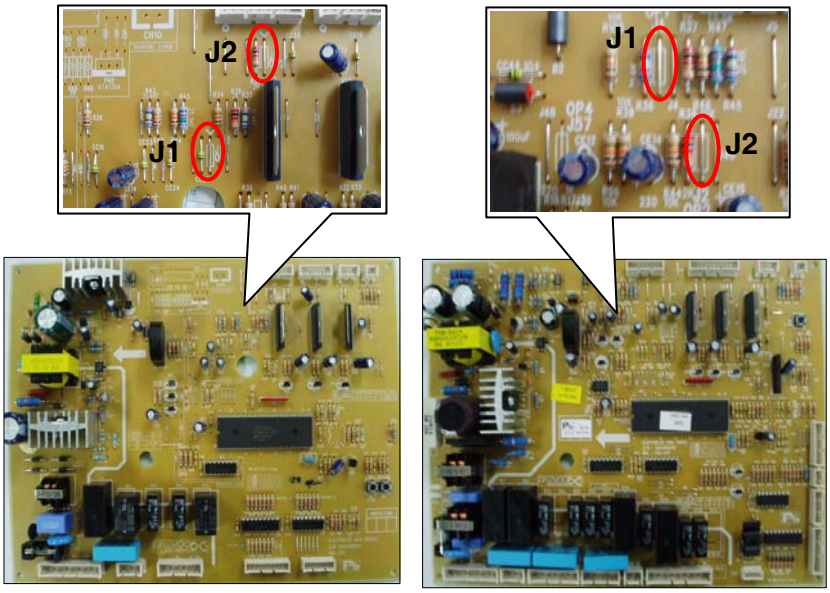
; Adjust refrigerator sensor OFF point

1) Basic Model



2) Dispenser Model





- Normal sensor resistance. (31.4kohm)
- Cut the J1 or J18 and increase sensor resistance. (33.4kohm)
- Cut the J1, J2 or J18, J19 and increase resistance. (35.4kohm)

Section		Normal	Weak Cooling happens	
Basic Model	Dispenser Model		1.5C down	3.0C down
J1	**J1**	-	Cut	Cut
J2	**J2**	-	-	Cut

6. Pull Down Mode

1) How to start

(Basic Model)

; Push the Super FRZ. 5 times while pushing the Super REF. button.

(Dispenser Model)

; Push the Lock button. Then Refrigerator Set + Freezer Set + Water/Ice 5 times at the same time.

2) How to control : Compressor, Freezer Fan, Refrigerator Fan and Compressor Cooling Fan is ON for 30 hours.

3) Display : ***Co*** display in Error Mode

4) Termination : After 30 hours or power reset.

7. How to check the filter running time. (Disepnser models only)

1) Press the LOCK button.

2) Press the Super Freezer Button 5 times while pushing the Freezer SET button.

3) Push the Freezer SET button until display **Fi-Lt**.

4) Remaining time display when push the Dispenser button.

(ex. 40 : 12 means that 4012 minutes remains until exchange.)

8. Adjust the amount of water (Default setting is P100, 86cc water supply) - Dispenser Models only

; Function to adjust the amount of water supply.

1) Press the LOCK button.

2) Press the SUPER FRZ. 5 times while pressing the FRZ. SET button.

3) Press the FRZ. SET button until display **P100** on LCD.

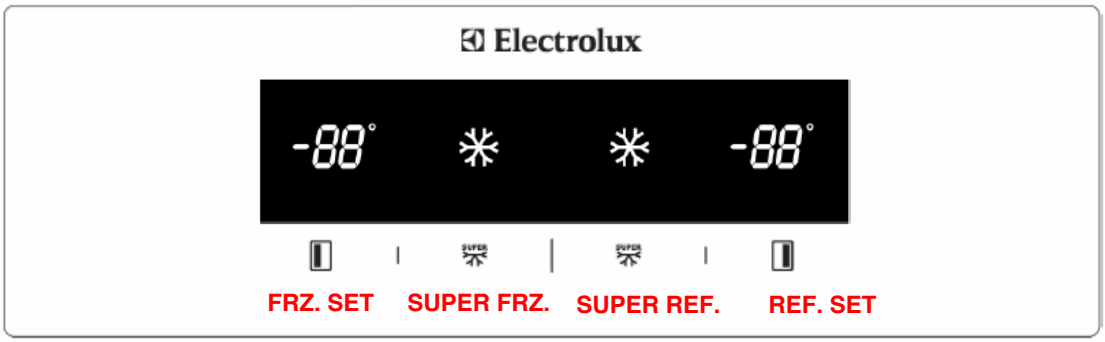
When need more water supply : Press the SUPER REF button.

- P101 (87cc), P102 (88cc), P103 (89cc)……

When need less water supply : Press the REF. SET button.

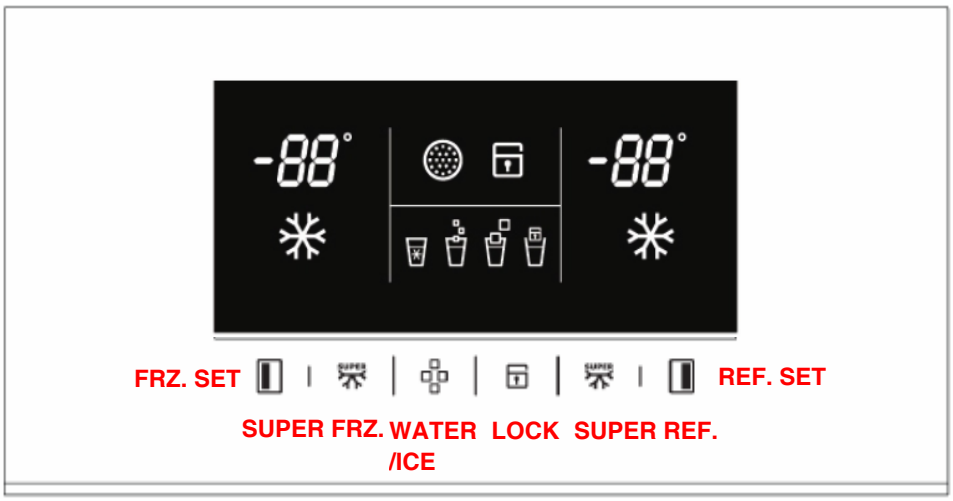
- P99 (85cc), P98 (84cc), P97 (83cc)……

1. Basic Model



Mode	How to enter
Forced Defrosting	FRZ. SET + REF. SET 5 times
Pull Down	REF. SET + SUPER FRZ. 5 times
Error Display	FRZ. SET + SUPER FRZ. 5 times

2. Dispenser Model



- All the modes active in LOCK condition except 'Reset Water Filter'. (Push the LOCK button)

Mode	How to enter
Forced Defrosting	FRZ. SET + REF. SET 5 times
Pull Down	REF. SET + FRZ. SET + WATER/ICE 5 times
Error Display	FRZ. SET + SUPER FRZ. 5 times
Reset Water Filter	Reset Water Filter button for 5seconds

1. Hose Ice maker Tube Assembly. (Dispenser Models Only)

1) Disassembling Procedure

No	Procedure	No	Procedure
1	 *Pull forward Ice Storage Case.*	*5*	 *Unscrew to remove Cover Guide Cab.*
2	 *Remove 2 screws.*	*6*	 *Disassemble Guide Cab Water Tube A As.*
3	 *Pull Ice Maker*	*7*	 *Pull Hose Ice Maker Tube As.*
4	 *Remove Water Hose Heater's connector.*		

2) How to check the Hose Ice Maker Tube As.

; Measure the resistane of two wire.

(Good) : 9680 Ohm (+ - 8%)
(8900 ~ 10456 ohm)

(If Defective) : exchange the new one.

2. Bracket Geared Motor Assembly (Dispenser Models Only)

1) Disassembling Procedure

No	Procedure	No	Procedure
1	 *Remove 2 screws.*	*4*	 *Pull the Bracket Geared Motor.*
2	 *And unscrew 4 points.*	*5*	 *Unscrew 6 points.*
3	 *Separate 6 pin connector of Geared Motor.*	*6*	 *Check solenoid Valve and Motor.*

2) How to check the Hose Ice Maker Tube As.

Parts	How to Check	Remark
Geared Motor	 *Checkthe resistance of 2 terminals with a Tester.*	*(Good): 11.3 Ohm (+-10%)* *(10.8 ~ 12.7 Ohm)* *(Defective): Change the part.*
Cube Soloneid Valve	 *Checkthe resistance of 2 terminals with a Tester.*	*(Good): 145 Ohm (+-8%)* *(133 ~ 156 Ohm)* *(Defective): Change the part.*

3. Dispenser Micro Switch (Dispenser Models Only)

1) Disassembling Procedure (Features are model dependent)

No	Procedure	No	Procedure
1	 Insert (-) screw driver into bottom hole of Dispenser Button and pull up.	2	 Pull out the Micro Switch. (Be careful not to damage the hook.)

2) How to check the Hose Ice Maker Tube As.

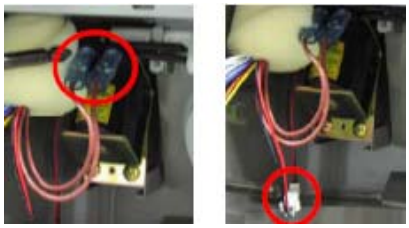
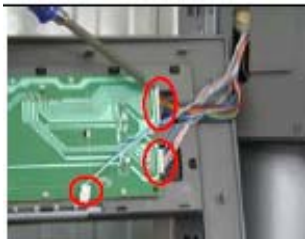
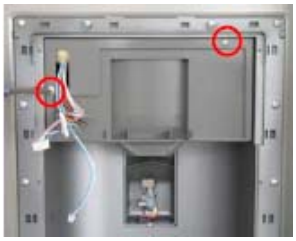
; Check both terminals (Red circle) with a Multi-Tester.
(Test Mode : Resistance)

Tact Switch (Blue circle)	Termainals (Red circle)	Test Result
ON (Close)	Connected	Some Value
OFF (Open)	Disconnected	No Value

; (If defective) Exchage new one.

4. Dispenser Solenoid Valve (Dispenser Models Only)

1) Disassembling Procedure (Features are model dependent)

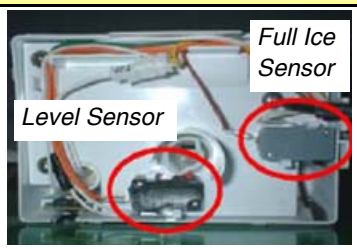
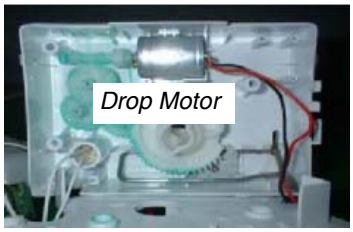
No	Procedure	No	Procedure
1	 Disassemble the Cover dispenser Box As	4	 Disconnect 2 terminals and 2P Wire.
2	 Separate Front PCB connector. (Features are model dependent.)	5	 Unscrew and remove Solenoid Valve.
3	 Unscrew to remove Box Dispenser Ice Shut.	6	 Unscrew and remove Cover Ice Flap.

2) How to check Dispenser Solenoid Valve

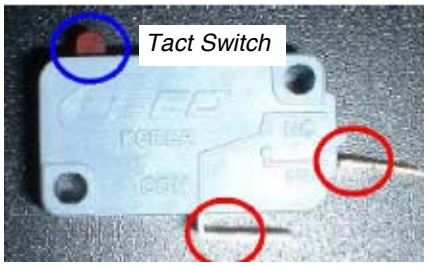
Parts	How to Check	Remark
Dispenser Solenoid Valve	 Check the resistance of both terminals.	(Good): 215 Ohm (+-10%) (193 ~ 236 Ohm) (Defective): Change the part.
Flap Heater Assembly	 Check the resistance of 2 terminals with a Tester.	(Good): 96 Ohm (+-8%) (88 ~ 104 Ohm) (Defective): Change the part.

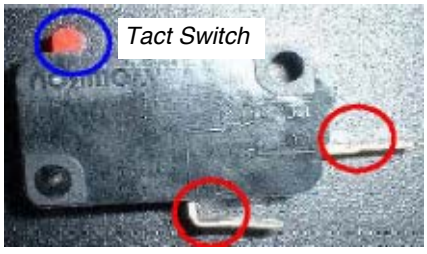
5. Ice Maker (Dispenser Models Only)

1) Disassembling Procedure

No	Procedure	No	Procedure
1	 Remove 2 screws.	6	 Remove full ice sensor and level sensor.
2	 Pull out the Ice Maker.	7	 Unscrew 3 points.
3	 Unscrew Fixture of Frame Ice Maker.	8	 Check if ice droping motor is normal or not.
4	 Separate Ice Maker from Frame Ice Maker.	9	 Remove 2 Pin housing (Ice sensor)
5	 Separate Cover I/M (A) from Cover I/M (B).	10	 Remove Ice sensor from Case Icing.

2) How to check Ice Maker

<table>
<tr><th>Parts</th><th>How to check</th><th>Remark</th></tr>
<tr><td>Ice Drop Motor</td><td> 
Check resistance between 2 wires.</td><td>(Good): 6 ~ 14 ohm
(If defective) : Change the motor</td></tr>
<tr><td>Ice Sensor</td><td> 
Check resistance between 2 wires.</td><td>(Good): 4.4 ~ 50 kohm
; It depends on room temperature.
(If defective) : Change the sensor</td></tr>
<tr><td>Full Ice Sensor Switch</td><td> 

Check resistance between reds.</td><td>(Good)<table><tr><td>Tact Switch</td><td>Terminal</td><td>Result</td></tr><tr><td>ON (Close)</td><td>Connect</td><td>Some value</td></tr><tr><td>OFF (Open)</td><td>Disconnect</td><td>No value (0)</td></tr></table>(If defective) : Change the Switch</td></tr>
<tr><td>Level Sensor Switch</td><td> 

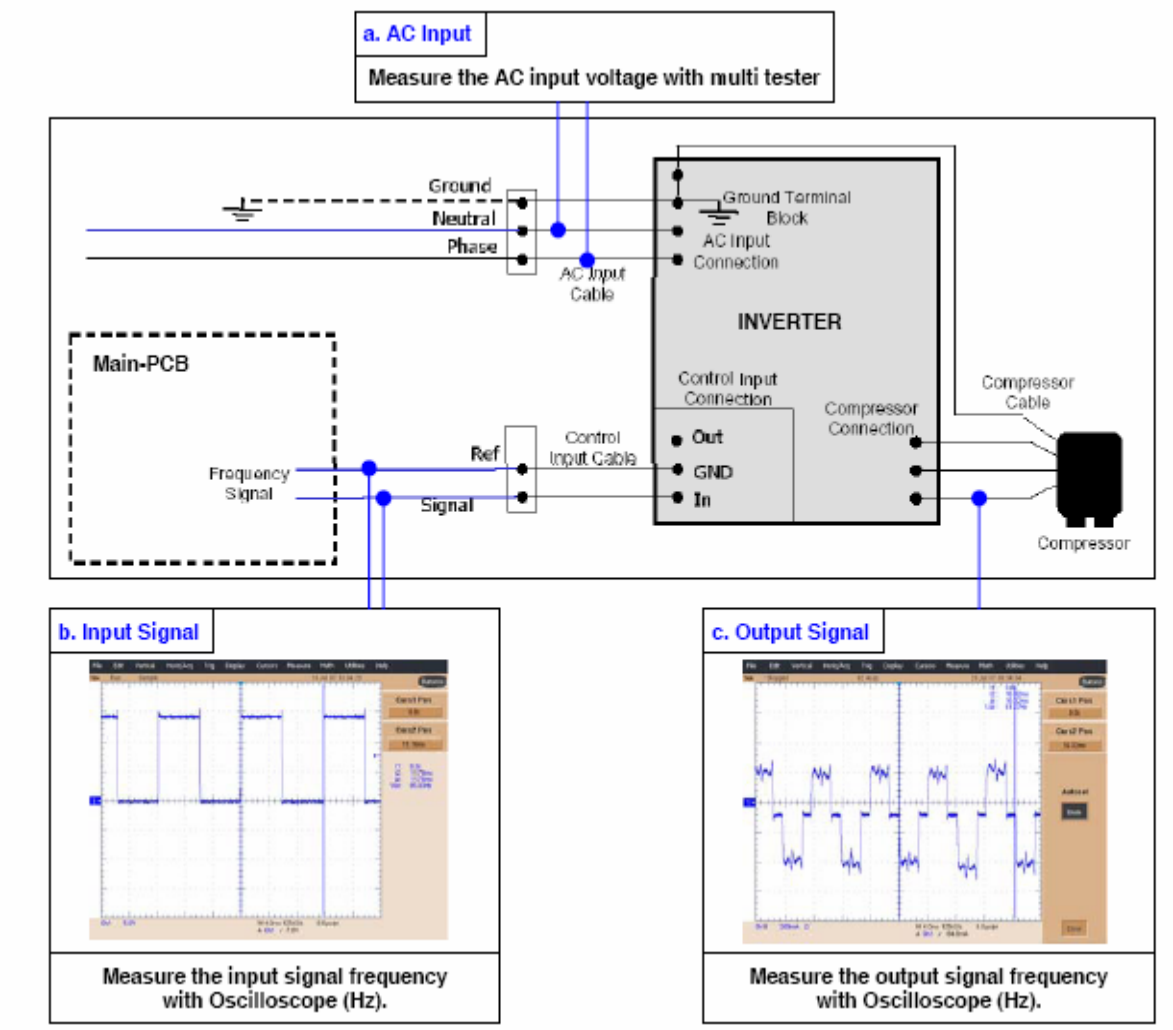
Check resistance between reds.</td><td>(Good)<table><tr><td>Tact Switch</td><td>Terminal</td><td>Result</td></tr><tr><td>ON (Close)</td><td>Connect</td><td>Some value</td></tr><tr><td>OFF (Open)</td><td>Disconnect</td><td>No value (0)</td></tr></table>(If defective) : Change the Switch</td></tr>
</table>

6. Box Inverter As (Frequency mode connection & Check point)

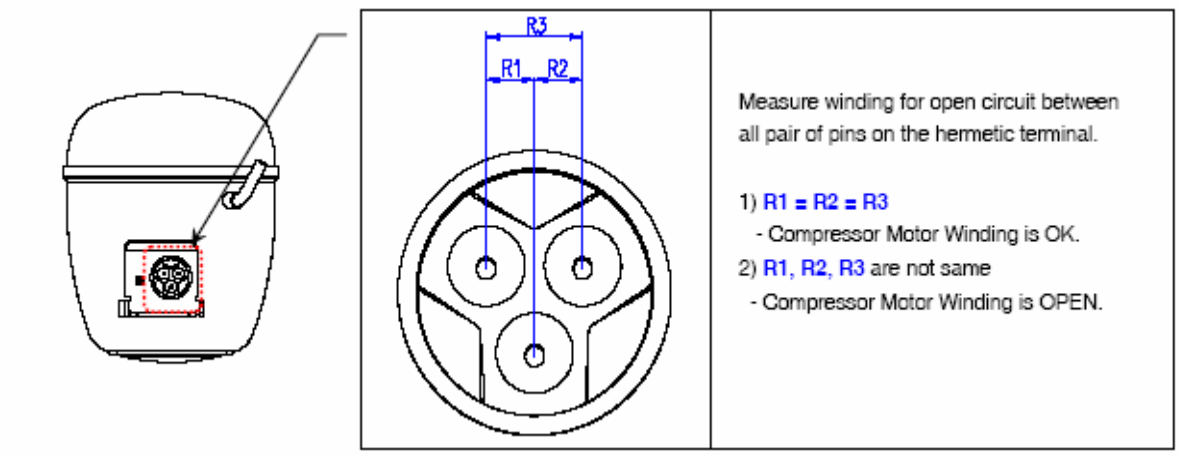
The main PCB is connected to the inverter through the Control Input connection, using the control input cable.

Frequency signal to the IN pint a

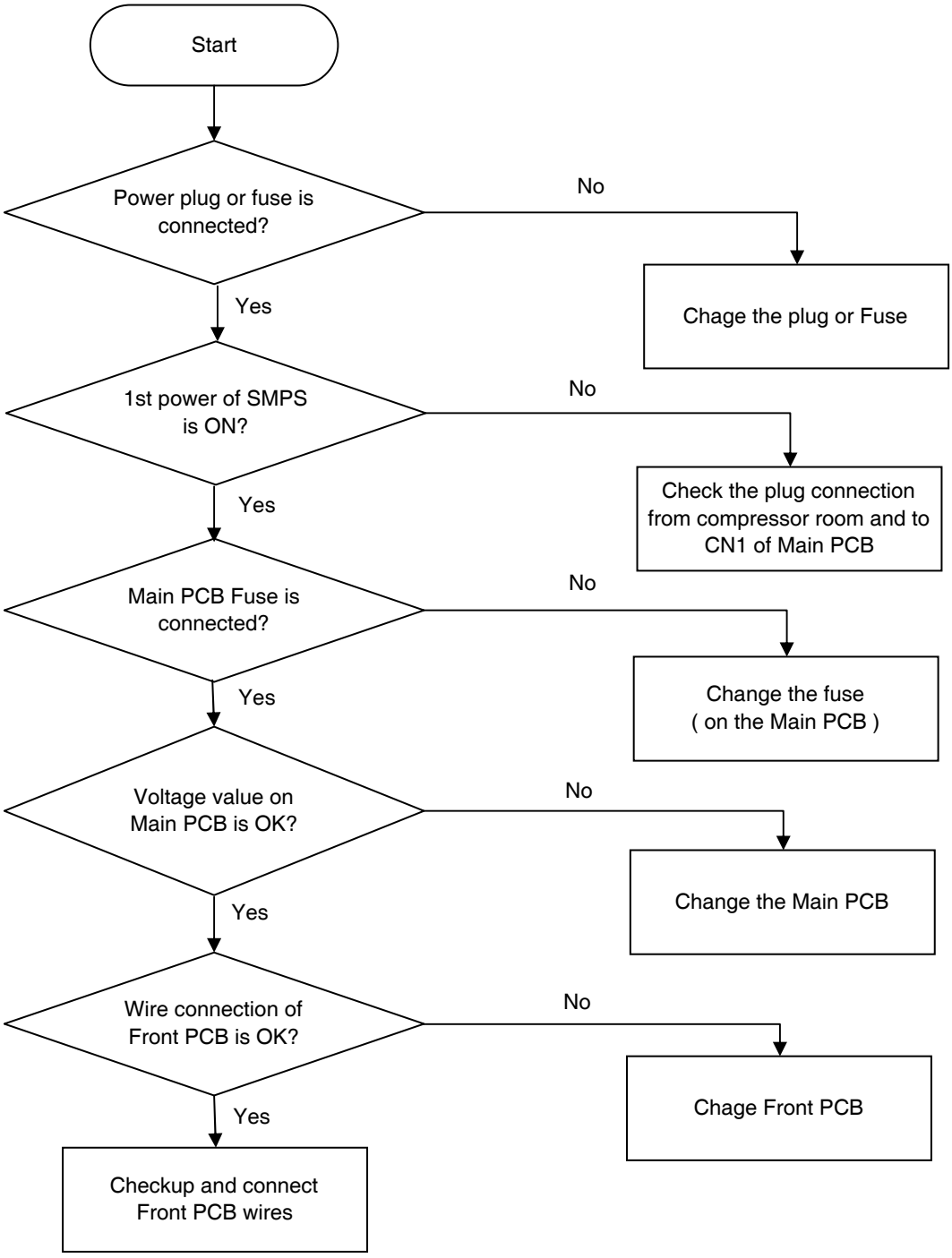
[Inverter AC Input & Output Signal]



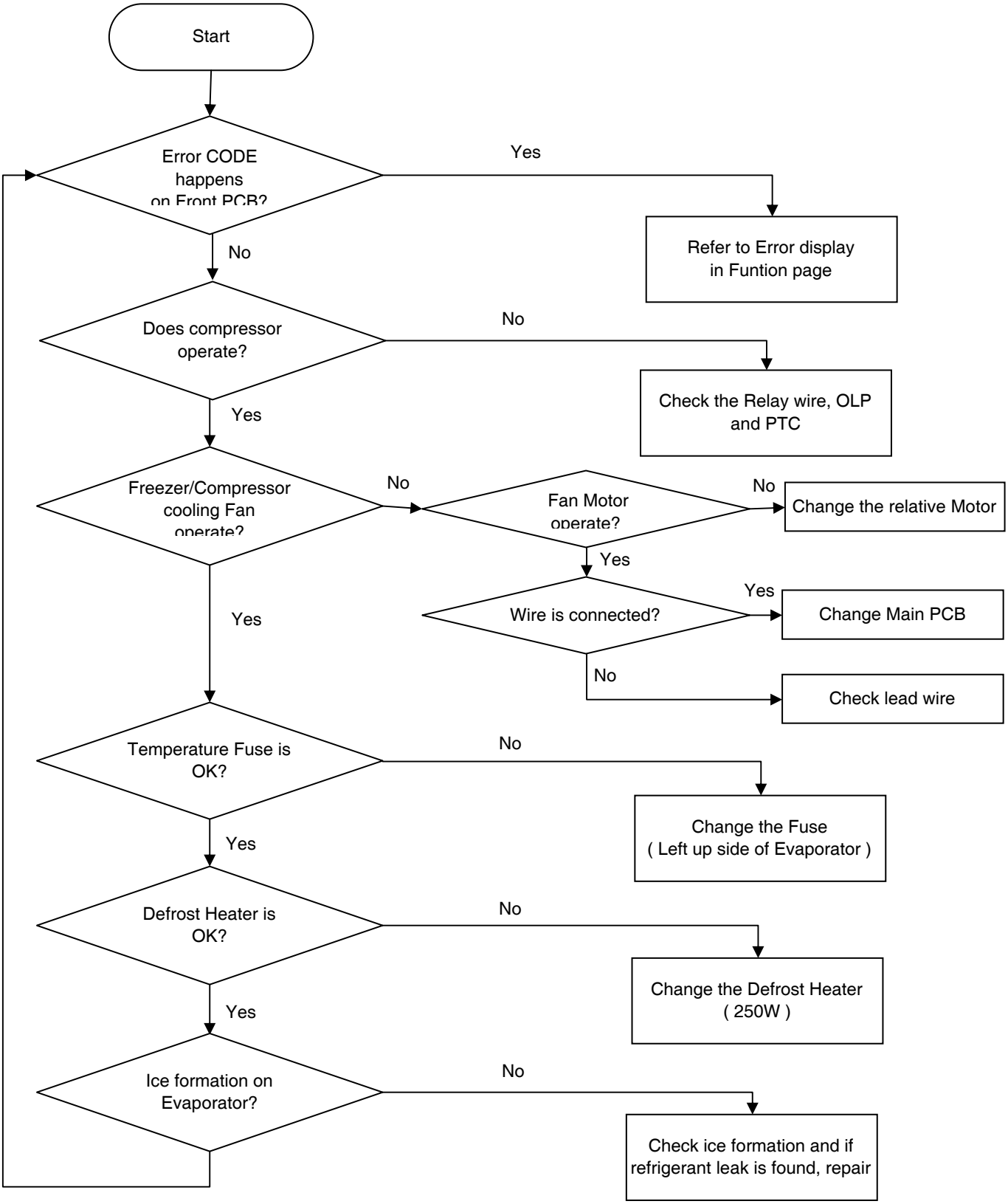
[Compressor Motor Winding]



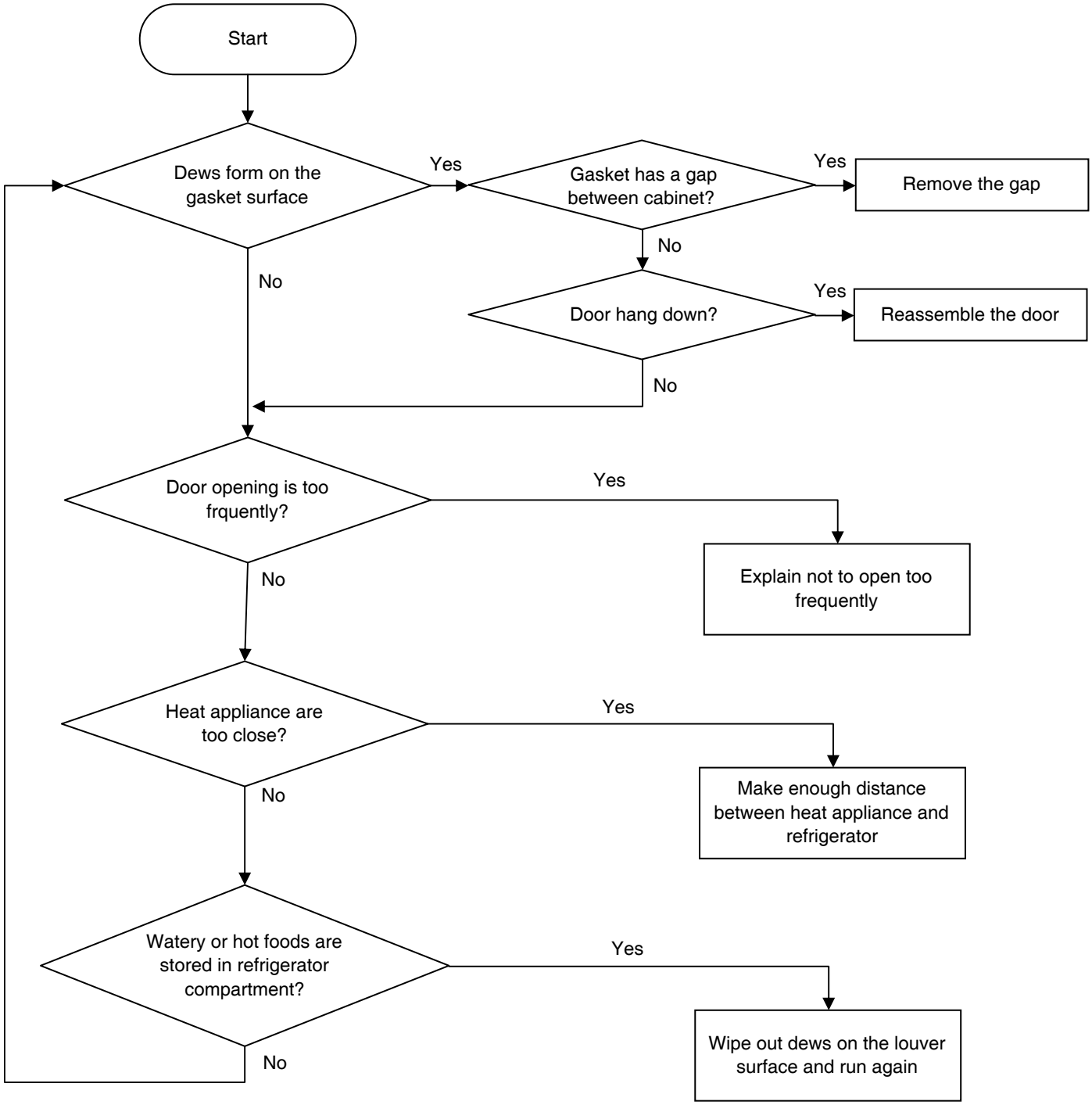
1. Faulty Start (Lights OFF, Front PCB Power Dead)



2. Freezing failure (Weak cooling)

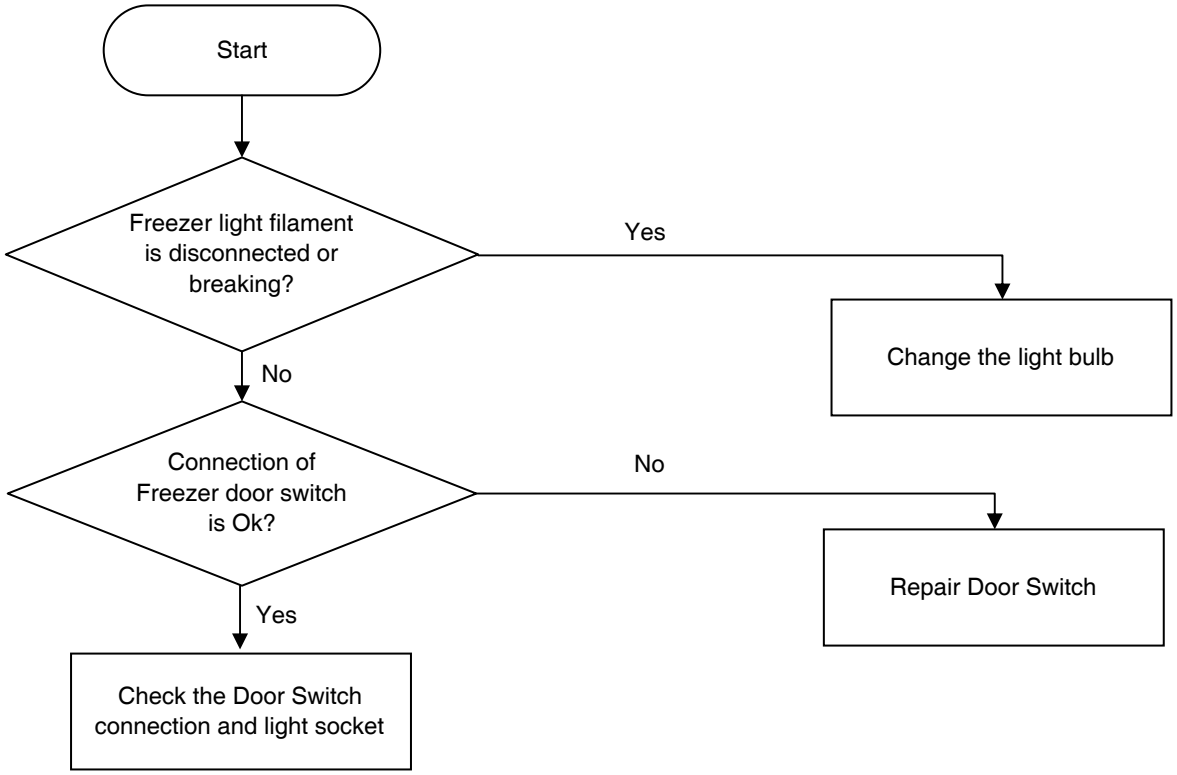


3. Ice formation on Freezer Louver

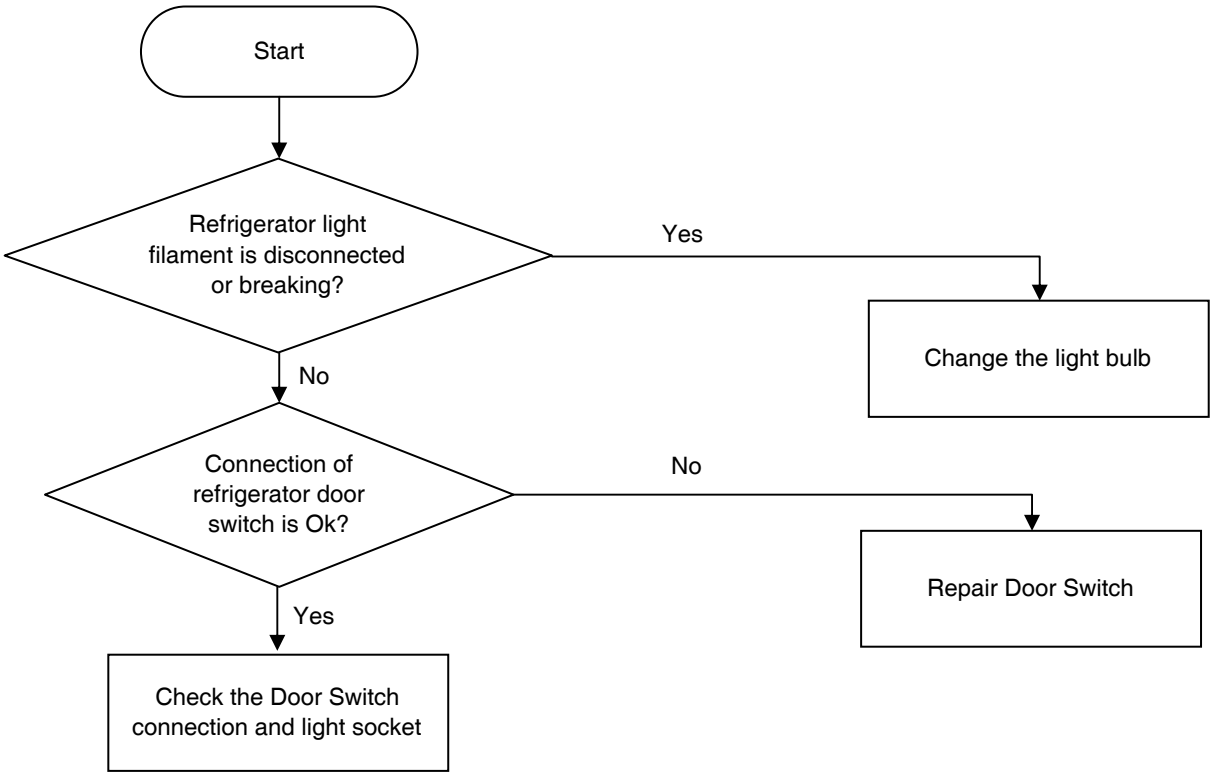


4. Disconnection / Breaking of Interior Lights Wire

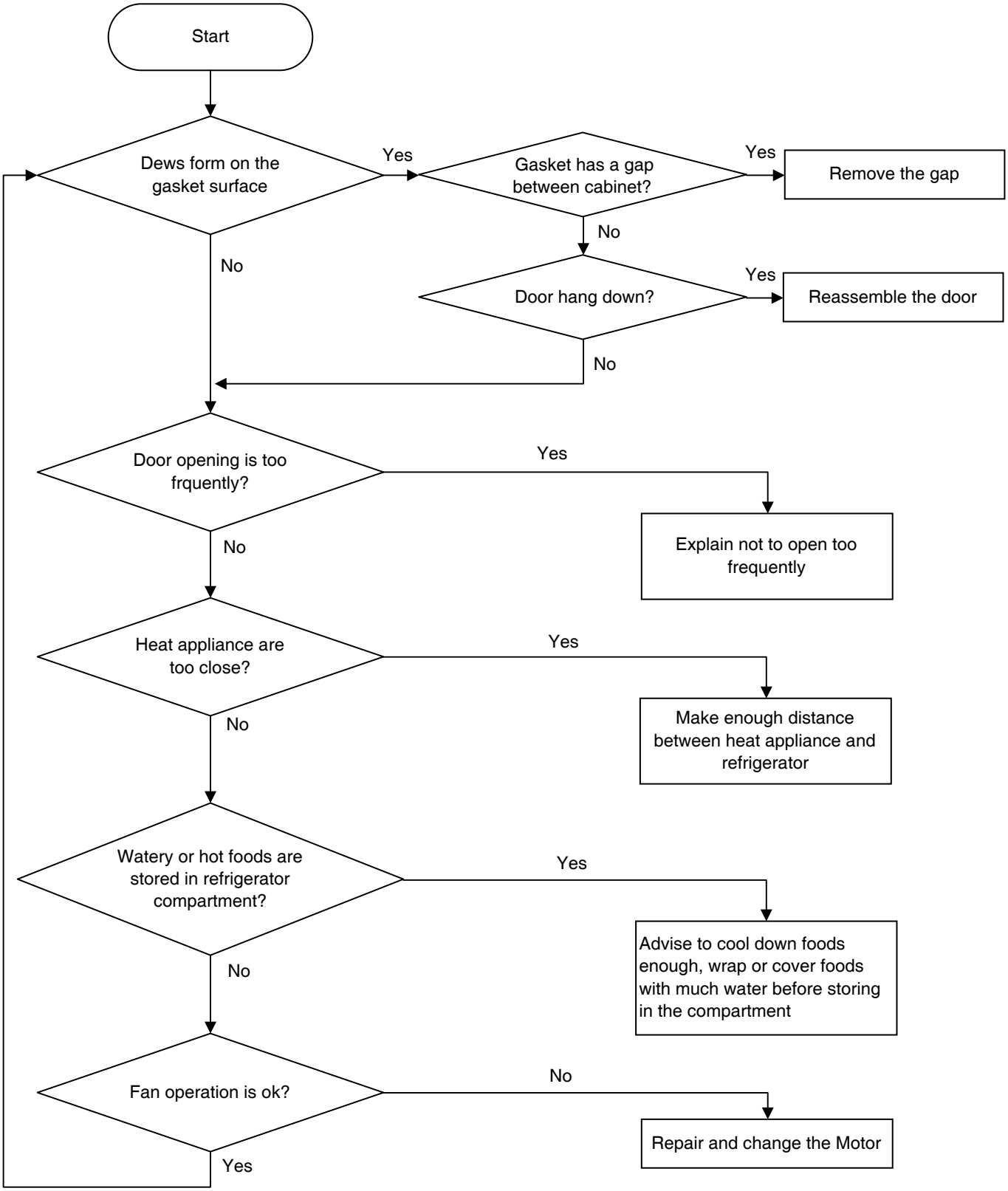
4-1. Freezer Door



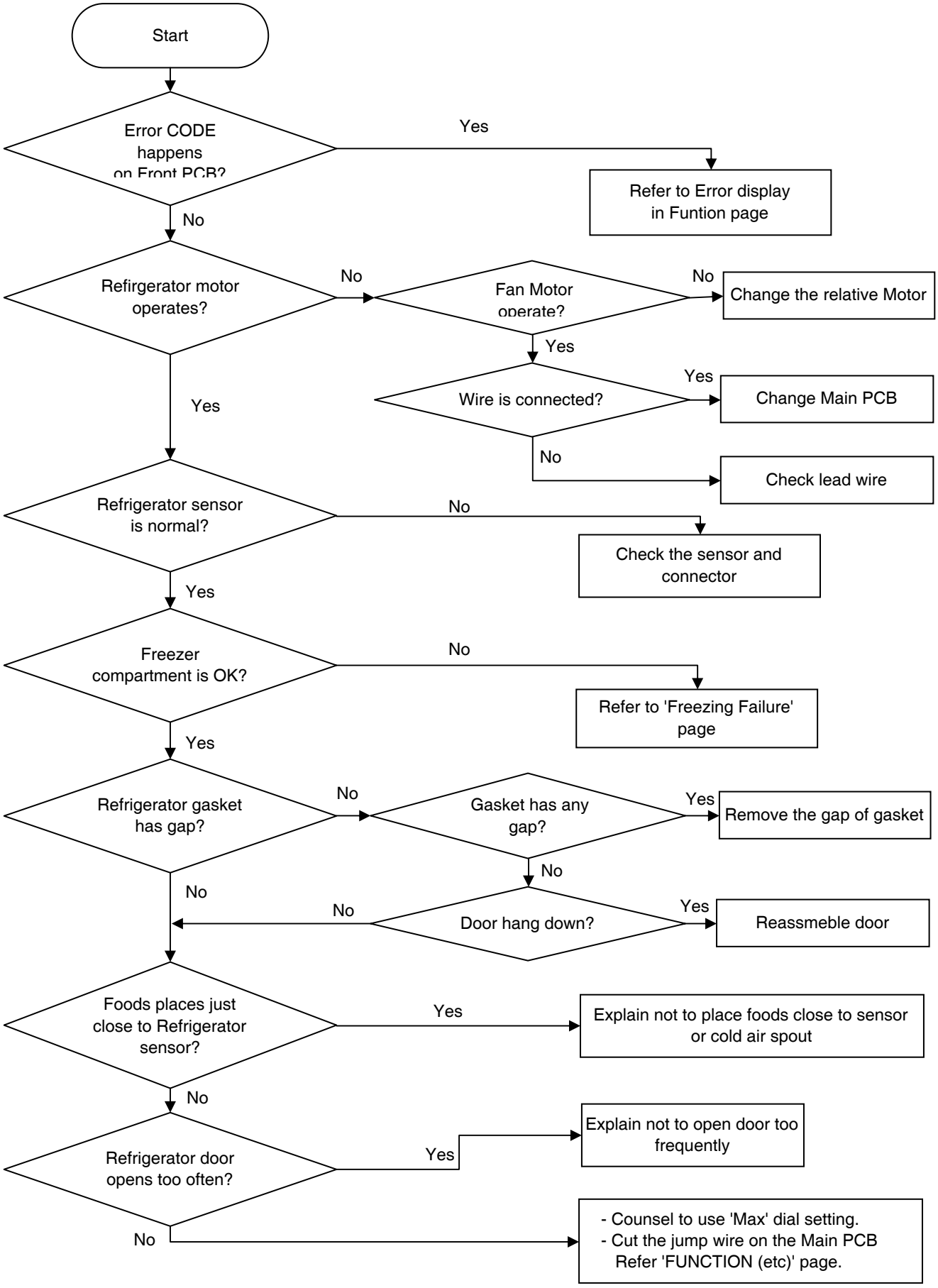
4-2. Refrigeraotor Door



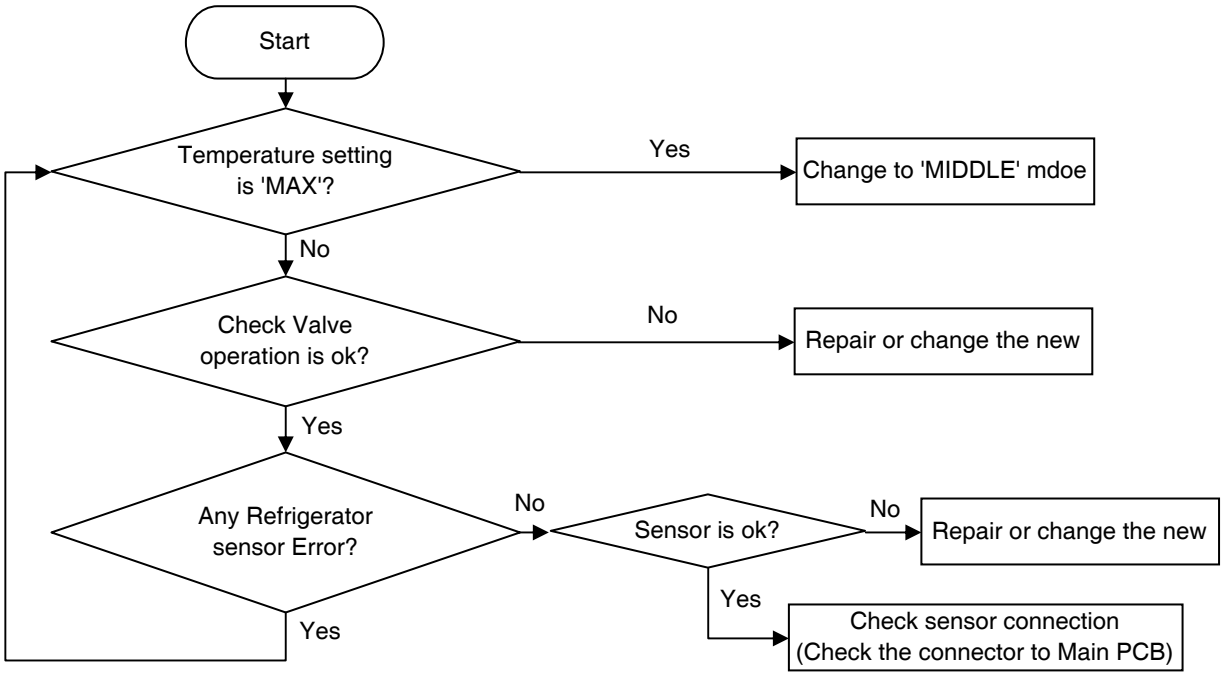
6. Dews on Refrigerator Compartment



5. Refrigeration failure (Foods does not get cool or cold soon)

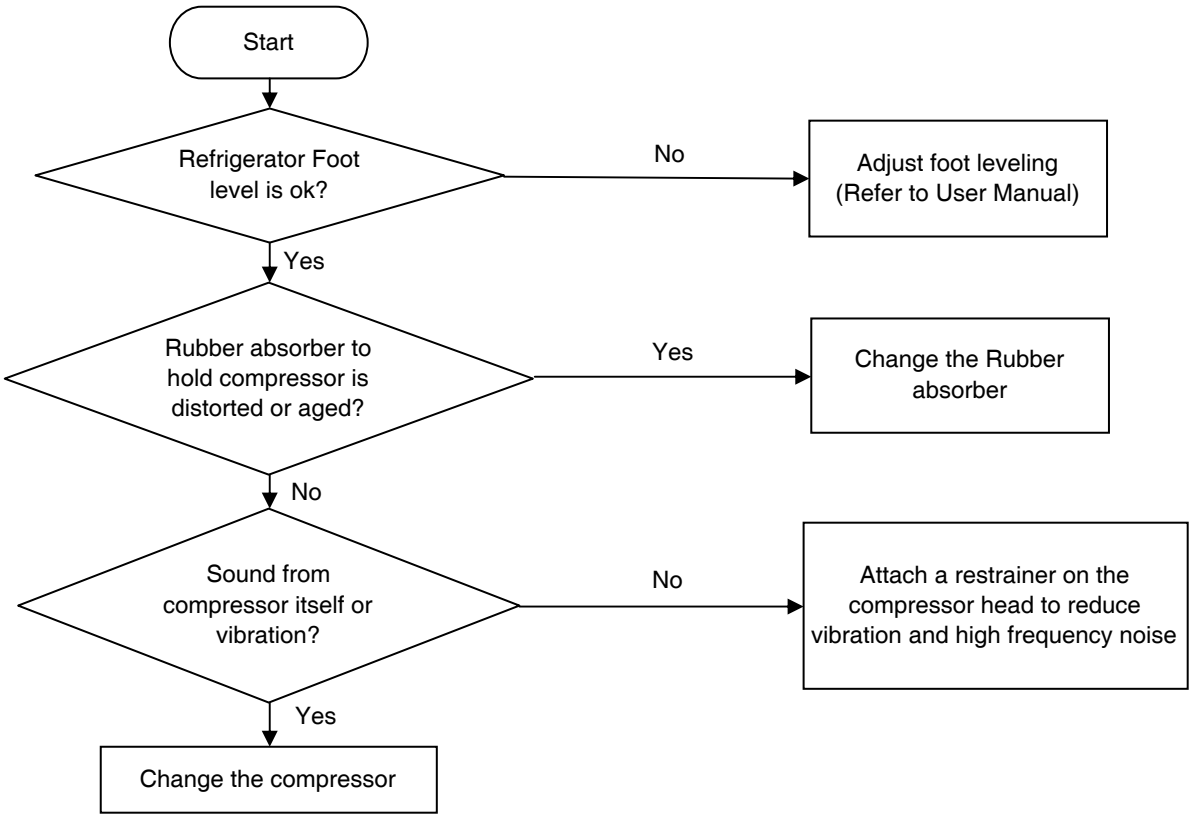


7. Cold of Vegetable Case



8. Operation Noise of Refrigerator

8-1. Compressor operation noise

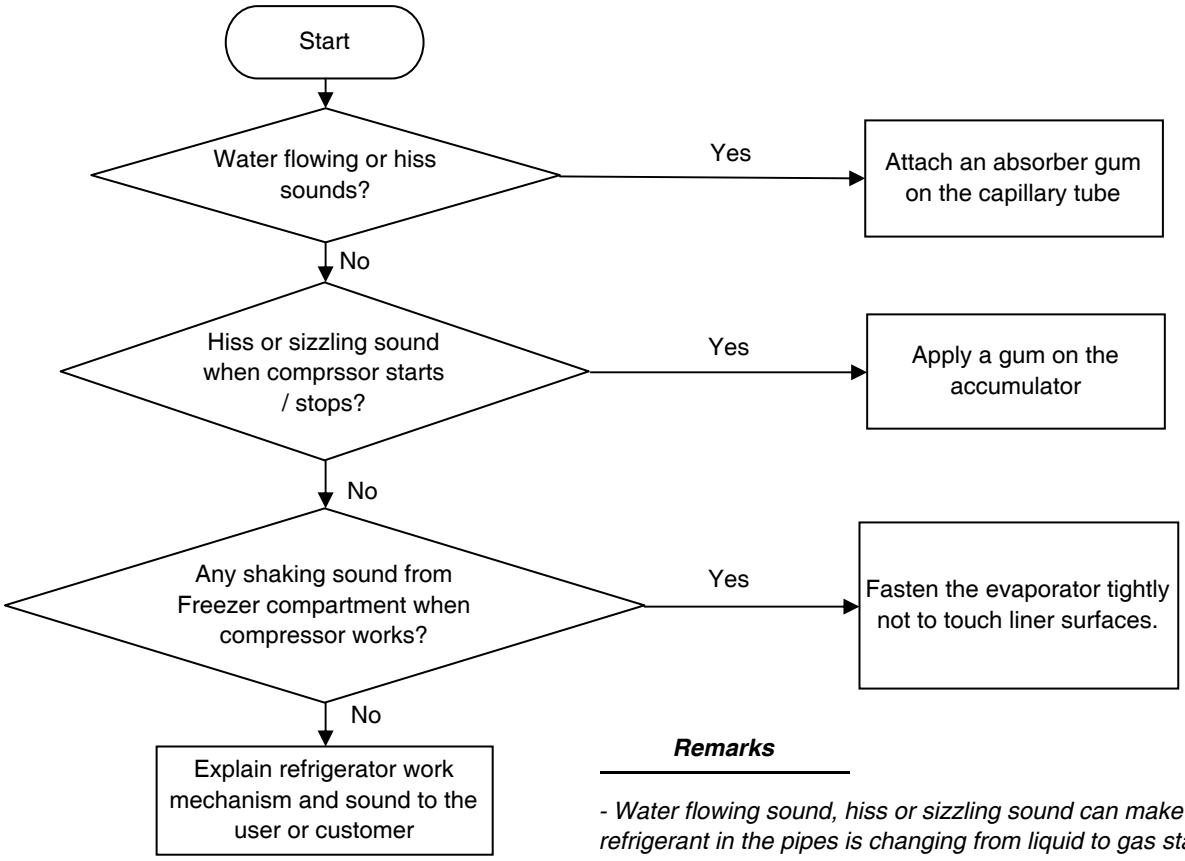


Remark

- Compressor sound is somewhat normal because it works like a heart to circulate the refrigerant in the pipes.

- Rattling or metalic touch sound of motor, piston of compressor can be heard when it starts or stops.

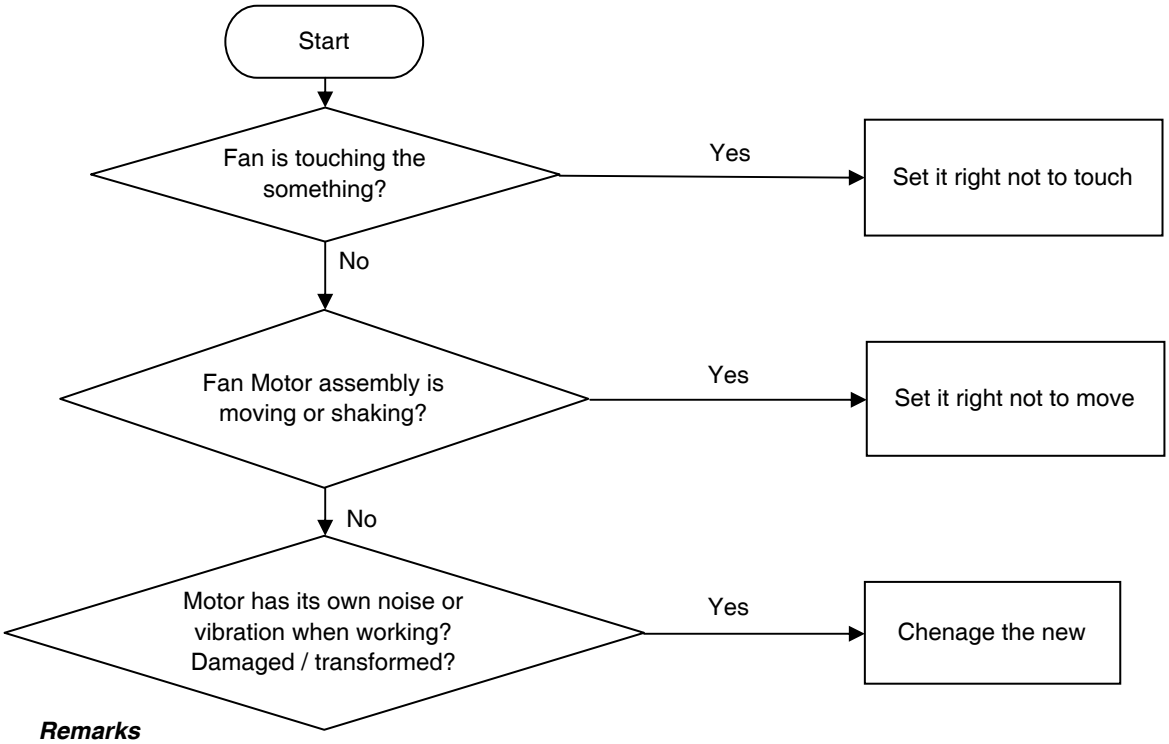
8-2. Refrigerant Flow Sound



Remarks

- Water flowing sound, hiss or sizzling sound can make while refrigerant in the pipes is changing from liquid to gas state when compressor starts or stops.
- It is normal sound.

8-3. Fan Noise

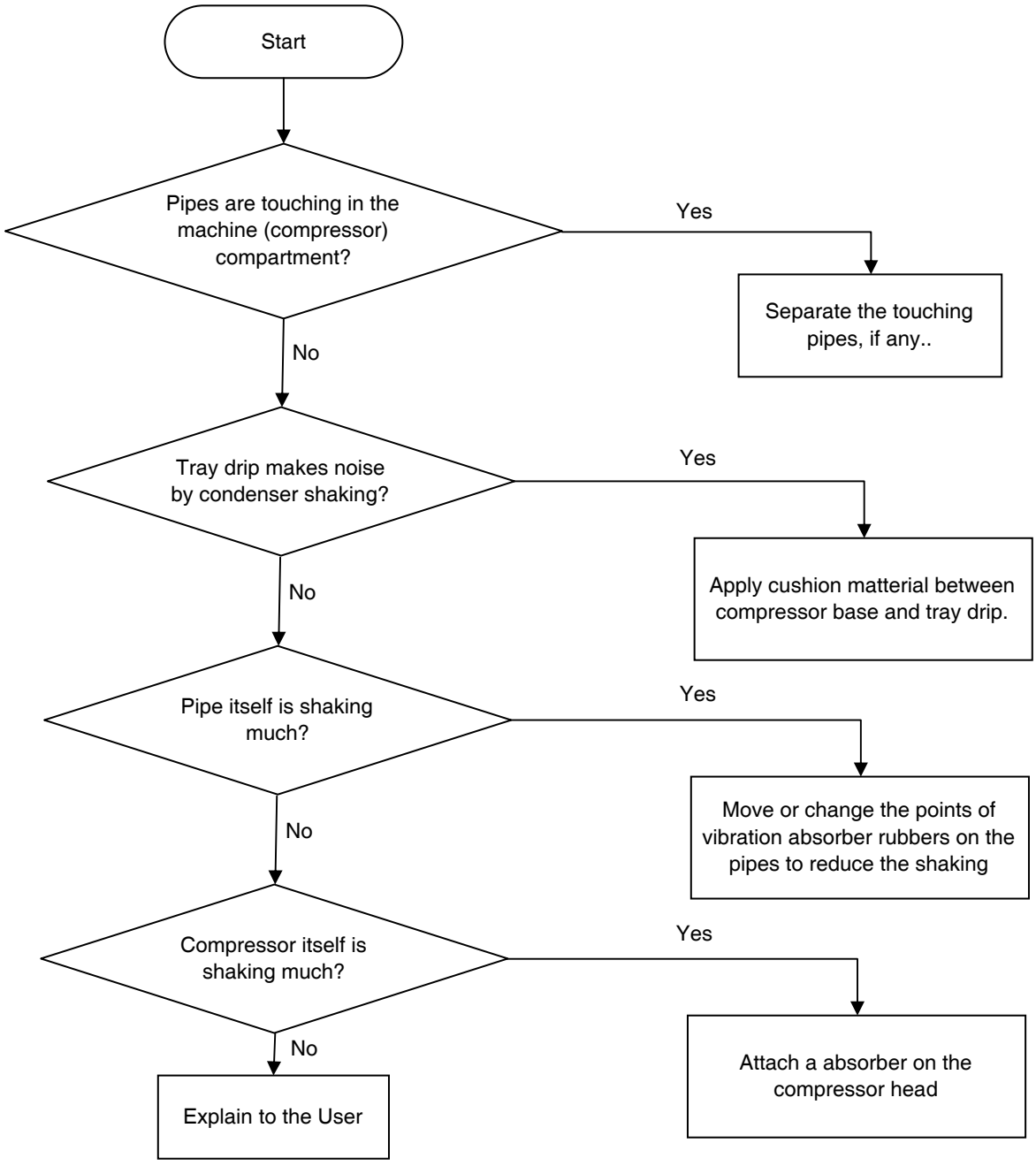


Remarks

- The fan is sending out cold air to circulate each corner of the compartsment.

- When the air is touching the surface of louver or liner wall, such sound can make.

8-4. Pipe Noise

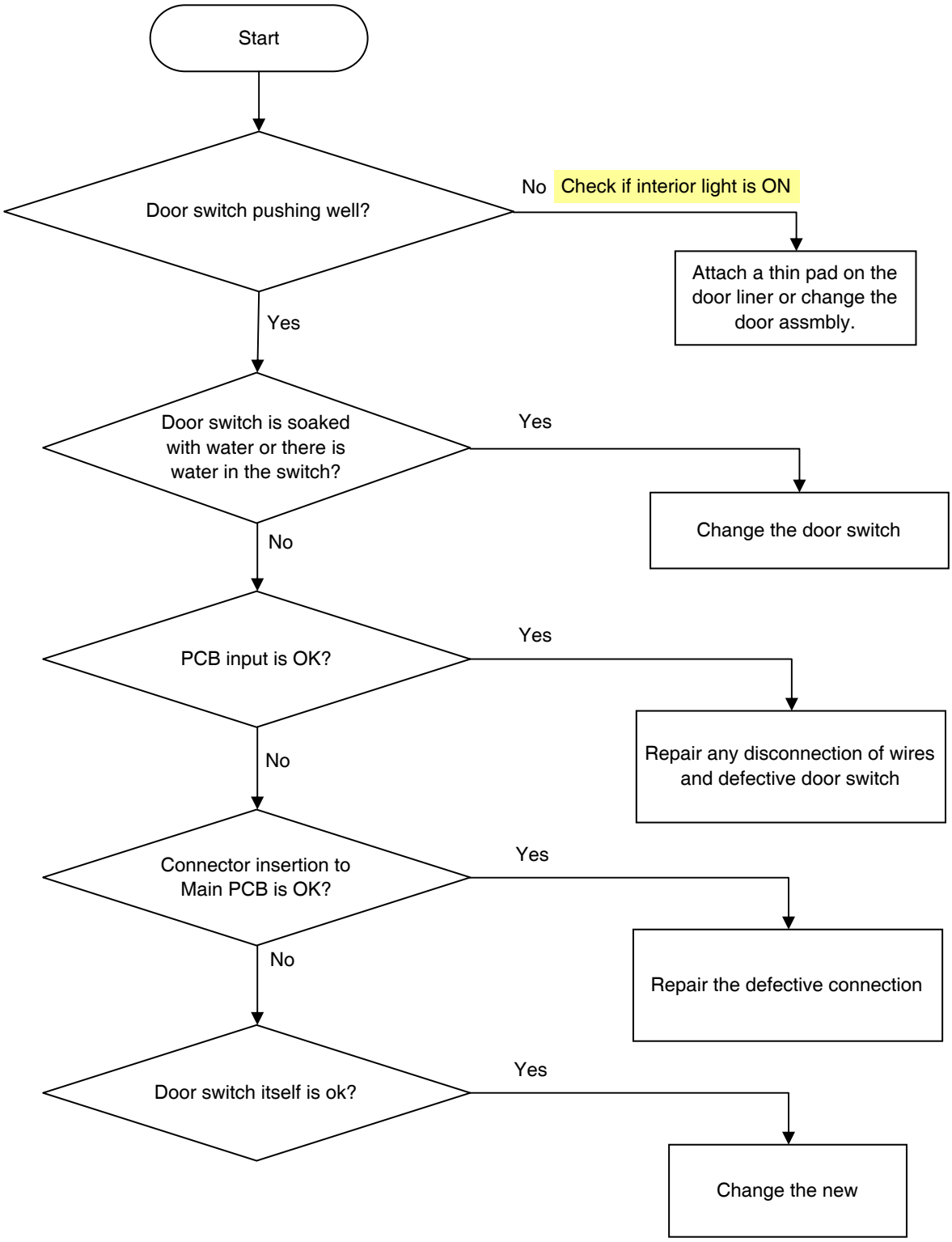


Remarks

- Refrigerant is erupting rapidly from the compressor to circulate pipes, so pipe shaking noise can make to some degree.

- In case compressor vibration is sent to a pipe directly, apply vibration absorber rubbers to welding pionts of pipepe and comprssor or to a much bent piont on the pipe.

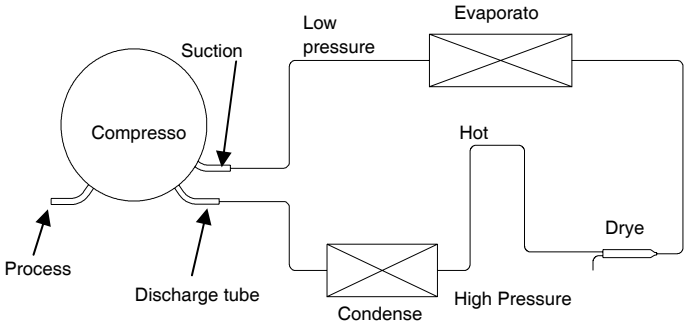
9. Door opening alarm continues after closing



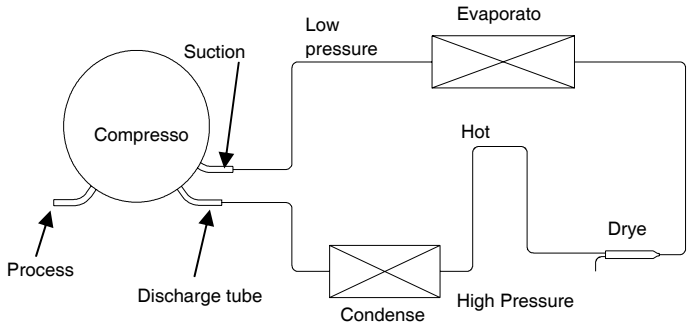
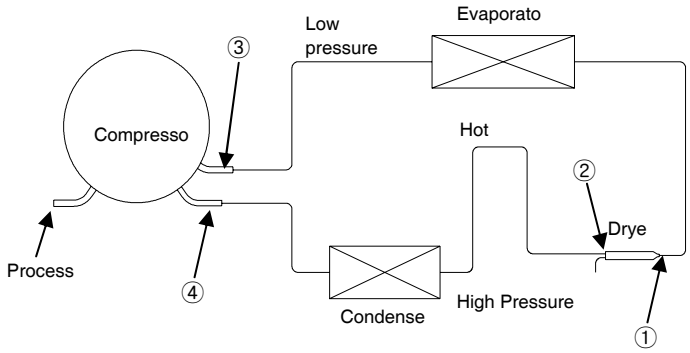
1. Summary of Heavy Repair

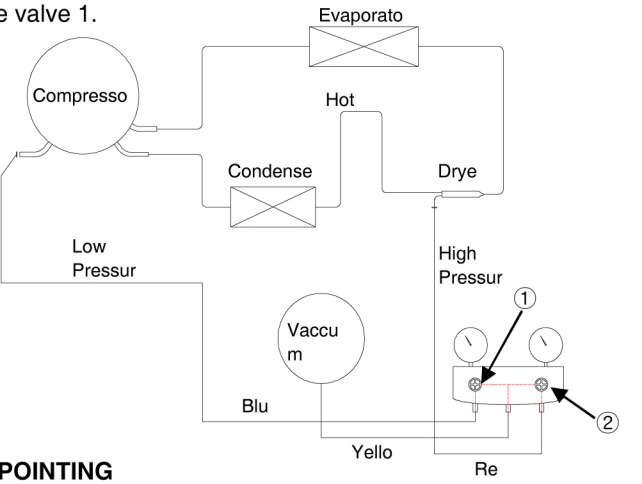
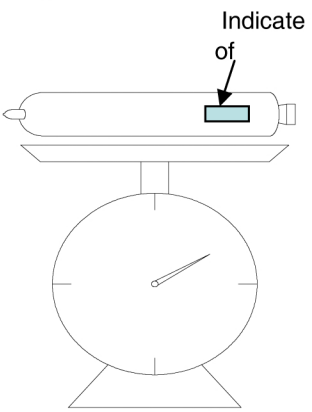
Process	Contents	Tools
Remove refrigerant Residuals	Cut charging pipe ends (Comp. & Dryer) and discharge refrigerant from drier and compressor.	Nipper, side cutters
Parts replacement and welding	Confirm refrigerant (R-134a or R-600a) and oil for compressor and drier. Confirm N2 sealing and packing conditions before use. Use good one for welding and assembly. Weld under nitrogen gas atmosphere. Repair in a clean and dry place.	Pipe Cutter, Gas welder, N2 gas
Vacuum	Evacuate for more than forty minutes after connecting manifold gauge hose and vacuum pump to high (drier) and low (compressor) pressure sides.	Vacuum pump , Manifold gauge.
Refrigerant charging and charging inlet welding	Weigh and control the bombe in a vacuum conditions with electronic scales and charge through compressor inlet (Process tube). Charge while refrigerator operates). Weld carefully after inlet pinching.	Bombe (mass cylinder), refrigerant manifold gauge, electronic scales, punching off flier, gas welding machine
Check refrigerant leak and cooling capacity	Check leak at weld joints. Note :Do not use soapy water for check. Check cooling capacity - Check condenser manually to see if warm. - Check hot pipe manually to see if warm. - Check frost formation on the whole surface of the evaporator.	Electronic Leak Detector, Driver.
Compressor compartment and tools arrangement	Remove flux from the silver weld joints with soft brusher wet rag. (Flux may be the cause of corrosion and leaks.) Clean tools and store them in a clean tool box or in their place.	Copper brush, Rag, Tool box
Transportation and installation	Installation should be conducted in accordance with the standard installation procedure. (Leave space of more than 5 cm from the wall for compressor compartment cooling fan mounted model.)	

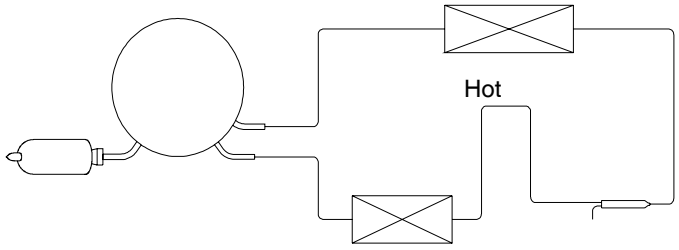
2. Precautions During Heavy Repair

Items	Precautions
Use of tools.	- Use special parts and tools for R-134a or R-600a.
Removal of retained refrigerant.	1) Remove retained refrigerant more than 5 minutes after turning off a refrigerator. (If not, oil will leak inside.) 2) Remove retained refrigerant by cutting first high pressure side (drier part) with a nipper and then cut low pressure side. (If the order is not observed, oil leak will happen.) 
Replacement of drier.	- Be sure to replace drier when repairing pipes and injecting refrigerant.
Nitrogen blowing welding.	- Weld under nitrogen atmosphere in order to prevent oxidation inside a pipe. (Nitrogen pressure : 0.1~0.2 kg/cm2.)
Others.	1) Nitrogen only should be used when cleaning inside of cycle pipes inside and sealing. 2) Check leakage with an electronic leakage tester. 3) Be sure to use a pipe cutter when cutting pipes. 4) Be careful not the water let intrude into the inside of the cycle.

3. Practical Work for Heavy Repair

Items	Precautions
1. Removal of residual refrigerant.	1) Remove residual refrigerant more than 5 minutes later after turning off the refrigerator. (If not, compressor oil may leak inside.) 2) Remove retained refrigerant slowly by cutting first high pressure side (drier part) with a nipper and then cut low pressure side. 
2. Nitrogen blowing welding.	 *** When replacing a drier:** Weld 1 and 2 parts by blowing nitrogen (0.1~0.2kg/cm2) to high pressure side after assembling a drier. *** When replacing a compressor:** Weld 3 and 4 parts by blowing nitrogen to the low pressure side. Note) For other parts, nitrogen blowing is not necessary because it does not produce oxidized scales inside pipe because of its short welding time. **- KEYPOINTING** Welding without nitrogen blowing produces oxidized scales inside a pipe, Which affect on performance and reliability of a product.

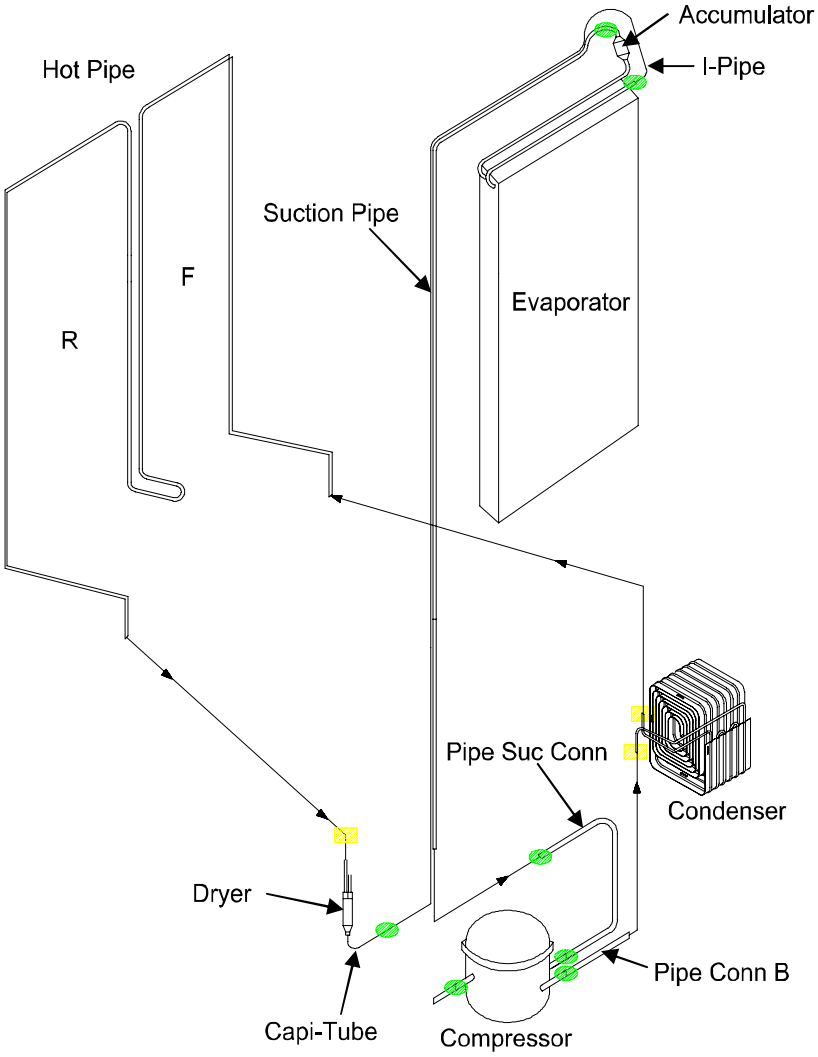
Items	Precautions
3.Vacuum degassing	*** Pipe Connection** Connect a red hose to the high pressure side and a blue hose to the low pressure side. *** Vacuum Sequence** Open 1,2 valves and evacuate for 40 minutes. Close valve 1.  **KEYPOINTING** 1) If power is applied during vacuum degassing, vacuum degassing shall be more effective. 2) Operate compressor while charging refrigerant. (It is easier and more certain to do like this.)
4.Refrigerant charging	*** Charging sequence** 1) Check the amount of refrigerant supplied to each model after completing vacuum degassing. 2) Evacuate bombe with a vacuum pump. 3) Measure the amount of refrigerant charged. - Measure the weight of an evacuated bombe with an electronic scale. - Charge refrigerant into a bombe and measure the weight. Calculate the weight of refrigerant charged into the bombe by subtracting the weight of an evacuated bombe.  **- KEYPOINTING** Be sure to charge the refrigerant at around 25C. **Calculation of amount of refrigerant** the amount of refrigerant charged = a weight after charging - a weight before charging (a weight of an evacuated cylinder)

Item	Precautions
4.Refrigerant charging	4) Refrigerant Charging Charge refrigerant while operating a compressor as shown above. 5) Pinch a charging pipe with a pinch-off plier after completion of charging. 6) Braze the end of a pinched charging pipe with copper brazer and take a gas leakage test on the welded parts. 
5. Gas-leakage test	* Take a leakage test on the welded or suspicious area with an electronic leakage tester.
6. Pipe arrangement in each cycle	* Check each pipe is placed in its original place before closing a cover back-M/C after completion of work.

< Standard Regulations for Heavy Repair >

1) Observe the safety precautions for gas handling.
2) Use JIG (or wet towel) in order to prevent electric wires from burning during welding.
(In order to prevent insulation break and accident.)
3) The inner case shall be melted and insulation material (polyurethane) shall be burnt if not cared during welding inner case parts.
4) The copper pipe shall be oxidized by overheating if not cared during welding.
5) Not allow the aluminum pipes to contact to copper pipes. (In order to prevent corrosion.)
6) Make sure that the inner diameter should not be distorted while cutting a capillary tube.
7) Be sure that a suction pipe and a filling tube should not be substituted each other during welding.
(High efficiency pump.)

Brzing Reference Drawings



▶ Welding Point

●	Copper Welding (Ag 5%)	7 Points
■	Silver Welding (Ag 35%)	3 Points

▶ Flow of Refrigeration Cycle